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**BEFORE THE PUBLIC UTILITIES COMMISSION  
OF THE STATE OF CALIFORNIA**

Application of Pacific Gas and Electric  
Company Proposing Cost of Service and Rates  
for Gas Transmission and Storage Services for  
the period of 2015-2017.

(U 39 G)

And Related Matter.

Application 13-12-012  
(Filed December 19, 2013)

Investigation 14-06-016

**PACIFIC GAS AND ELECTRIC COMPANY'S (U 39 G)  
TRANSMISSION PIPELINE COMPLIANCE REPORT**

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October 31, 2016

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**I. INTRODUCTION**

Pursuant to Ordering Paragraph 11 of Decision 16-06-056, attached is PG&E's  
Transmission Pipeline Compliance Report, for the reporting period January 1, 2015 through  
September 30, 2016.

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**PACIFIC GAS AND ELECTRIC COMPANY**

**TRANSMISSION PIPELINE  
COMPLIANCE REPORT**

**NO. 2016-01**

**REPORTING PERIOD  
JANUARY 1, 2015 – SEPTEMBER 30, 2016**

**IN COMPLIANCE WITH CPUC DECISION 16-06-056**

**SUBMITTED OCTOBER 31, 2016**

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PACIFIC GAS AND ELECTRIC COMPANY  
TRANSMISSION PIPELINE  
COMPLIANCE REPORT  
NO. 2016-01  
REPORTING PERIOD  
JANUARY 1, 2015 – SEPTEMBER 30, 2016  
IN COMPLIANCE WITH CPUC DECISION 16-06-056  
SUBMITTED OCTOBER 31, 2016

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**PACIFIC GAS AND ELECTRIC COMPANY  
TRANSMISSION PIPELINE COMPLIANCE REPORT  
NO. 2016-01  
IN COMPLIANCE WITH CPUC DECISION 16-06-056**

**Introduction**

On July 1, 2016, the California Public Utilities Commission (CPUC or Commission) issued Decision (D.) 16-06-056 in Pacific Gas and Electric Company's (PG&E or the Company) 2015 Gas Transmission and Storage (GT&S) rate case (Application (A.) 13-12-012). Ordering Paragraph (OP) 11 of the decision directs PG&E to serve quarterly compliance reports of PG&E's transmission pipeline work, including Strength Testing,<sup>1</sup> Pipe Replacement, and In-Line Inspection (ILI). Per OP 11, Transmission Pipeline Compliance Reports shall generally follow the format set forth in Attachment D of the Pipeline Safety Enhancement Plan (PSEP) D.12-12-030, and shall include all costs recorded to these programs, such that they provide an accurate and complete record of all costs at the project and program level. OP 11 of D.16-06-056 requires that:

Pacific Gas and Electric Company shall file a quarterly compliance report of its transmission pipeline work, including pressure test, pipe replacement, and ILI. The report shall generally follow the format in Attachment D of Decision 12-12-030 and shall include all costs recorded to these programs, such that they provide an accurate and complete record of all costs at the project and program level. Consistent with the joint stipulation on Reporting and Communications between PG&E and the Office of Ratepayer Advocates, the format and content of the report may be revised by a working group to ensure that the report is useful to parties. PG&E's first compliance filing shall cover the period between January 1, 2015 and the quarter in which this Decision is issued, and shall be due no later than 30 days after the end of the quarter. The report shall be served on the Commission's Safety and Enforcement Division, Energy Division, and on the service list of this proceeding.

Transmission Pipeline Compliance Report (Report) No. 2016-01 is submitted in compliance with the directive set forth in OP 11 and reflects the reporting period of January 1, 2015 to September 30, 2016. This report is being served on the Commission's Safety and Enforcement Division, Energy Division and the service list of the 2015 GT&S rate case proceeding (A.13-12-012).

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<sup>1</sup> "Strength test" is also referred to as the Hydrotest Program.

**Report Format**

The report requirements set forth in Attachment D of the PSEP decision were framed to address specific issues relevant to the PSEP proceeding, which, in several ways, differs from the 2015 GT&S rate case proceeding.

This Transmission Pipeline Compliance Report is organized to address each of the applicable requirements outlined in Attachment D of D.12-12-030 regarding the transmission pipeline programs: Strength Testing, Pipe Replacement, and ILI. This Report includes all costs recorded to programmatic Maintenance Activity Types (MAT) associated with the required transmission pipeline programs.

For the reporting period of January 1, 2015 through September 30, 2016, Table 1 provides a summary of the actual costs incurred.

**TABLE 1**  
**ADOPTED 2015 GT&S EXPENSE AND CAPITAL**  
**COMPARED TO RECORDED COSTS BY PROGRAM**  
**SUMMARY OF REPORTING PERIOD**  
**JANUARY 1, 2015 – SEPTEMBER 30, 2016**  
**(THOUSANDS OF DOLLARS)**

Programs	2015 Adopted / Imputed <sup>(b)</sup>	2015 Recorded <sup>(d)</sup>	2016 Adopted / Imputed <sup>(b)</sup>	2016 Recorded <sup>(c)(d)</sup>
<b>Expense</b>				
Strength Testing <sup>(a)</sup>	100,238	116,100	102,767	159,143
In-Line Inspection	31,521	60,788	31,641	66,472
<b>Total</b>	<b>131,759</b>	<b>176,888</b>	<b>134,408</b>	<b>225,615</b>
<b>Capital</b>				
In-Line Inspection	59,236	128,389	89,966	109,192
Pipeline Replacement	177,962	118,285	182,055	91,033
<b>Total</b>	<b>237,198</b>	<b>246,674</b>	<b>272,021</b>	<b>200,225</b>

<sup>(a)</sup> The 2016 recorded amounts for Strength Test includes bundled labor and overhead costs. If presented without labor rate overhead costs, the MAT JTC portion of the strength test 2016 expenditures is approximately \$63.7 million.

<sup>(b)</sup> The source of adopted funding for 2015 are D. 16-06-056, Appendix D-Tables 1 and 2, and Appendix I-Tables 1 and 2 which are adjusted for benefits and payroll taxes to reflect the 2014 GRC Decision 14-08-032. 2016 funding is imputed consistent with the adopted Post Test-Year increase specified in Appendix E and Appendix I.

<sup>(c)</sup> The data represents Q1 through Q3 of 2016 only.

<sup>(d)</sup> All costs include burdens. 2015 uses old cost model methodology to burden and 2016 uses the new methodology to apply burdens.

Starting in 2016, PG&E changed its cost model from overhead costs bundled in the labor rates reflected in both capital and expense orders, to a new cost model where those overheads are separated from the labor rates for non-balancing account expense activities. In the new cost model, capital and balancing accounts continue to receive all applicable overhead costs while non-balancing account expense only receives certain overhead costs. For non-balancing account expense spend shown in Table 1 (MAT JTC – Hydrotest), the 2016 recorded includes overhead costs to provide comparability to adopted amounts. A more complete explanation of the cost model change is provided in the response to Requirement 29.



## Decision-Making Process

### 1. Project Planning and Prioritization of Work

*Describe PG&E's project planning process including how the projects were and are being scheduled and sequenced and what measures were and are being taken to conduct the work in a cost effective manner.*

#### **Response**

Gas Operations completes its multi-year planning by following PG&E's Integrated Planning process. PG&E used its Integrated Planning process as described in this Requirement to make risk-informed decisions when establishing the 2015 and 2016 Plan. When determining the final forecast for each program or project in the portfolio during the Integrated Planning process, consideration is given to risk as well as other factors such as: classification of work, system constraints, work readiness, and financial constraints.

The annual Integrated Planning process is led by PG&E's Finance and Risk Department and is followed by all Lines of Business (LOB). This process provides the framework for how PG&E will accomplish its strategic initiatives. The Executive Guidance forum starts the annual process and provides the strategic focus for the Company, followed by Session D (Risk and Compliance), and Sessions 1 and 2. The Integrated Planning process incorporates the Executive Guidance and information from Session D to develop the 5-year strategic plan (Session 1) and the 2-year detailed work plan (Session 2).

**FIGURE 1-1  
INTEGRATED PLANNING PROCESS AND KEY INPUTS**



The Executive Guidance is provided by the Chief Executive Officer to the Senior Leadership team at the beginning of each calendar year and results in the Company's strategic focus for the next five years. Executive Guidance sets the direction for the Company.

Session D is completed at the beginning of each calendar year and provides an assessment of enterprise, operational, and compliance risks. The Session D deliverables include: a Risk Register, which highlights the top risks to the organization; a Session D presentation; and an executive session. During the executive session, senior PG&E officers across all LOBs discuss top risks and compliance requirements, progress made in risk reduction, and commitments to specific objectives of the Enterprise and Operational Risk Management and compliance programs.

Session 1 (S-1) is completed during the middle of the year following the completion of Session D. S-1 outlines PG&E's multi-year strategic plan and includes a high-level, multi-year forecast. The S-1 process includes a written strategic plan and meetings of senior PG&E officers across all LOBs to discuss work needs and priorities. Through these meetings and the information contained in the strategic plans, leaders determine priorities for the Company as a whole to

achieve its strategic goals and provide feedback to LOB leaders on their strategic plans. Once these plans are approved, strategic plans for each LOB are finalized.

Session 2 (S-2) is completed in the second half of the year after the completion of S-1. S-2 outlines PG&E's execution plan and includes a multi-year work plan and forecast at a more detailed level than provided in S-1. The S-2 process includes a written work plan and meetings of senior PG&E officers across all LOBs to discuss work needs and priorities. Through these meetings and the information contained in the execution plans, leaders determine priorities for the Company as a whole to achieve its execution plan. Once these plans are approved, detailed 2-year work plans are finalized.

#### Establishing the 2015 and 2016 Plan

##### 1. Investment Planning Process

The Asset Program Owners, working with the Asset Family Owners (AFO), submit a list of proposed projects to Investment Planning for portfolio-level prioritization across all assets and programs. Investment Planning leads the process to develop a multi-year investment plan that is informed by risk and considers constraints. The objective of this prioritization is for Gas Operations to address its higher risks with its chosen mitigation programs given constraints including compliance requirements, obligations to serve, resources, system availability, executability, and affordability. To accomplish this objective, Investment Planning leads the following steps, which includes the Risk Informed Budget Allocation process:

###### a. Classification

The first step in the Investment Planning process is to classify projects or programs. This step identifies the key drivers for the work, which are used during prioritization with the risk scores for each project or program. Classifications include, but are not limited to: Mandatory; Regulatory Compliance; Commitment; and Work Requested by Others (WRO).

###### b. Program and Project Risk Scoring

The next step in the Investment Planning process is to risk score the respective projects or programs. There is a distinction in purpose between the Risk Register risk score, developed during Session D, and the Program and Project risk score. The purpose of the Gas Operations

Risk Register risk score is to rank and prioritize high consequence and low frequency risks at the asset level. The purpose of the Program and Project risk score is to relatively capture the consequence and likelihood scores for Safety, Environmental, and Reliability, based on the worst reasonable direct impact of not investing in the program or project. The Program and Project risk scoring process uses a framework to assess consequence and likelihood that is aligned with the framework utilized in the development of the Gas Operations Risk Register.

c. Program and Project Risk Score Validation

The next step is to validate the Program and Project risk score. To facilitate consistent application of risk scores within and across asset families, Investment Planning conducts calibration sessions with (AFOs. In addition, Investment Planning conducts analysis to validate that the Program and Project risk scores are aligned with the Gas Operations Risk Register risk scores.

d. Preliminary Portfolio

Next, based on the classification and calibrated risk scoring for projects or programs, Investment Planning builds a preliminary investment portfolio by first including all Mandatory, WRO, and Commitment work, and then includes programs ranked by their respective Program and Project risk score.

e. Constraints Analysis

Once the preliminary investment portfolio is compiled, Investment Planning collects information on constraints. Investment Planning then recommends adjustments to the preliminary portfolio based on these constraints prior to the Investment Decision Meetings.

f. Investment Decision Meetings

Investment Planning then conducts a series of Investment Decision Meetings including the AFOs to analyze the portfolio and make any adjustments to the portfolio based on risks and constraints. These adjustments are typically in the form of increases or decreases to the scope of a program, or acceleration or deceleration of the pace of a program. Investment Planning is responsible for providing portfolio

analysis and facilitating the meetings; however, AFOs are accountable for making investment decisions.

## 2. Reprioritization Due to Timing of the 2015 GT&S rate case decision

Gas Transmission re-prioritized the investment portfolio in 2015 and 2016 due to the timing of the 2015 GT&S rate case decision. The result was a portfolio that included execution of mandatory work, moderated construction and incorporated more design and engineering work.

In re-planning the portfolio, the Gas Transmission organization utilized the same framework, outlined above, to reallocate funding for projects informed by risk.

### Project Planning and Scheduling

Once the Plan is approved, project teams maintain schedules for each approved project that incorporate resource availability and constraint information including, but not limited to:

- 1) Environmental constraints and permitting duration;
- 2) Land acquisition requirements and duration;
- 3) Materials availability;
- 4) Engineering/design duration;
- 5) Pipeline clearance and coordination with other planned gas transmission work and maintenance activities;
- 6) Customer impact and communication; and
- 7) Construction resource availability.

Within the Project Management organization, projects are grouped into Workstreams based upon the work type for each program (e.g., Strength Test, Pipe Replacement, and ILI). On a weekly basis, Project Managers meet with key stakeholders to validate schedule information across the entire Workstream and address issues. These Workstream reviews enable functional organizations—such as: Engineering and Integrity Management; Land and Environmental Permitting; Sourcing; Compressed Natural Gas/Liquefied Natural Gas (CNG/LNG); and Construction—to identify opportunities to align project schedules and resource availability.

When individual functional constraints affect multiple projects across transmission work, the Workstreams seek to align these projects to execute concurrently. For example, during the summer of 2016, a series of strength

testing, valve automation and ILI upgrade projects were impacted by the same constraints associated with taking a clearance on Line 402 near Redding. The radial feed configuration of the pipeline and the presence of large commercial customer load necessitated a single clearance with significant CNG/LNG support. Each Workstream successfully aligned the project schedules to execute concurrent construction activities.

Planning activities focus upon the identification of opportunities to align work across the Workstreams. These include both sequencing work schedules in geographic areas and concurrent construction of co-located work.

The above described activities to schedule and sequence projects directly support the conduct of work in a cost effective manner. In addition, PG&E undertakes a range of other activities that support the completion of work in a cost effective manner including:

- Construction Management and Inspection oversight of construction activities that monitor and ensure work quality;
- Early constructability input from internal and ex construction resources, including internal and external construction resources;
- Development and maintenance of a standardized project delivery methodology with associated controls and governance oversight; and
- Bulk materials procurement, management of long-lead materials orders, and supplier quality oversight.

## Resource Procurement and Oversight

### 2. Resource Planning

*Explain how PG&E decided whether to do the work in-house (e.g., use own employees and equipment) or contract the work out to other parties.*

#### **Response**

In order to complete gas transmission work on a timely basis, PG&E blends the use of internal and contract resources. Internal and contract resources are assigned to complete project deliverables under the control of respective PG&E functional areas. In general, each functional area assigns contract resources to address specific resource constraints or operational risks including:

- Fluctuating workloads (e.g., seasonal construction windows, activities with short or uncertain durations) that exceed the capacity of internal resources; and
- Access to specialized expertise or equipment (e.g., non-destructive testing, water testing, trenchless construction).

PG&E reviews and prioritizes the assignment and availability of Gas Transmission General Construction (GTGC) on a bi-weekly basis prior to the assignment of projects to external construction contractors. The decision to assign internal construction resources, or contractor resources, to a specific project is based upon factors including, but not limited to:

- Work type and quantity: extent to which required labor skills and construction methods match available internal/external resources;
- Location and schedule: extent to which planned work aligns with existing internal/external work plans; and
- Schedule uncertainty: extent to which project schedule dependencies (e.g., timing of permits or land acquisition), may require an increased level of flexibility regarding mobilization.

These factors and other considerations are considered in the allocation of all transmission pipeline projects. For example, the decision to allocate 26 miles of pipe replacement construction work on Line 407 in Sacramento Valley in 2016 included an assessment of the project's schedule uncertainty and the magnitude of the required construction resources, which resulted in the decision to contract the work to external resources.

### 3. Contractor Selection Process

*For work contracted out to other parties, what criteria did PG&E use to select the contractors and did PG&E use a competitive bidding process to select the contractor(s)? If not, explain why.*

#### **Response**

PG&E uses the Alliance Construction Contractor delivery Model or the competitive bidding process criteria when selecting contractors. For the reporting period of January 1, 2015 through September 30, 2016, PG&E awarded the majority of the construction contractor spend within the Strength Testing, Pipe Replacement, and ILI programs under the Alliance Construction Contractor Delivery Model. PG&E also followed individual competitive bid processes for large construction projects, and periodically renegotiated standard contractor rates within its existing Master Service Agreements (MSA) that are used to assign primarily construction support services.

During this reporting period, PG&E used a competitive bidding process to award the Line 407 pipe replacement project in the Sacramento Valley to existing Alliance Contractors. In 2016, PG&E also began to competitively bid other construction services such as inspection and Non-Destructive Examination (NDE) for the ILI project services.

#### The Alliance Construction Contractor Delivery Model

PG&E employs the Alliance Construction Contractor Delivery Model for the majority of its gas transmission projects, except for those projects that go out for competitive bidding to PG&E's existing pre-approved contract resource list. The Alliance Construction Contractor Delivery Model integrates the project assignment between the available resources from PG&E GTGC with Alliance construction contractors. The Alliance Construction Contractor Delivery Model was implemented after completing a comprehensive screening and selection process of qualified contractors. Four contractors were selected from an initial pool of 40 Contractors. The primary objectives of this strategy include the establishment of best-in-class safety performance, a robust construction delivery model, and the maintenance of a qualified/skilled workforce to efficiently perform planned work volumes. The four Alliance Contractors are assigned construction regions and in general, but not always, are assigned work in that geographic area



when internal construction resources (GTGC) are not available. See the response to Requirement 17 for additional detail regarding the bundling of work.

The Alliance model includes the following key components:

1) Resources and Planning

- Consistent Alliance “A” Team availability and scalable crew composition;
- Commitment to provide early constructability feedback via joint planning and co-location;
- Bundling of work across workstreams and within four regional areas that span PG&E’s entire service area to reduce “peaks and valleys” in resource requirements; and
- Collaboration on industry best practices and lessons learned.

2) Performance Measurement

- Increased transparency and alignment across construction cost estimation models using negotiated standardized “open book” labor and equipment rates, negotiated profit margins, and consistent overhead (general and administrative) expenses. The labor and equipment rates, overhead, and profit margins are competitively negotiated at the signing of the MSA;
- Shared project risk/incentive model using a negotiated “target pricing” model, in which under- and over-runs are shared on a negotiated basis between PG&E and the contractor;
- Project completion cost true-up and lessons learned—costs being fully auditable when requested by PG&E;
- Five-year agreement with cancellation off ramps, including option to bid any portion of work to maintain pricing/cost discipline; and
- Semi-annual performance score card and quality leadership reviews for each individual Contractor.

Competitive Bidding Process:

Project work awarded to contractors outside of the Alliance Construction Contractor Delivery Model is assigned to suppliers using existing MSAs that use rates previously subject to competitive bidding. The supplier MSA governs the terms and conditions that apply to all work performed by the supplier. Project work scopes and details are subsequently agreed upon using Contract Work Authorizations.

For some large projects (see the beginning of this response for examples), a specific project competitive bidding process is used rather than the Alliance Construction Contractor Delivery Model. In those instances, the competitive bidding process is as follows:

- 1) A pre-bid conference is typically held to present potential bidders with contract terms (e.g., insurance requirements, bid process duration, project duration, sub-contractor requirements, project design, or construction documents). During this meeting, a bidder's request regarding the bidding process and design documents are also entertained via an online tool (Power Advocate) used by Bidders and PG&E. Pre-bid conferences are led by the Project Manager and supported by a Lead Engineer, sourcing, and contract teams.
- 2) The next step in the competitive bidding process is to schedule a project site(s) visit that takes place on the same day as the pre-bid conference or at a later date. Job Owners allow bidders to submit their proposal or bid typically within a one to four week window. During this time, bidders have the opportunity to raise questions from contract documents, which may need further clarification on design detail associated with the constructability of the final outcome.
- 3) Once proposals are submitted to PG&E by a specific date and time, bids are evaluated and scored in accordance with PG&E's pre-established scoring process. Bidders selected by PG&E are later interviewed and at that time, a second short-list round of bids may occur. Once a bidder is selected, the final contract price may be further negotiated to achieve the best possible value.

#### 4. Quality Assurance – Outside Contractors

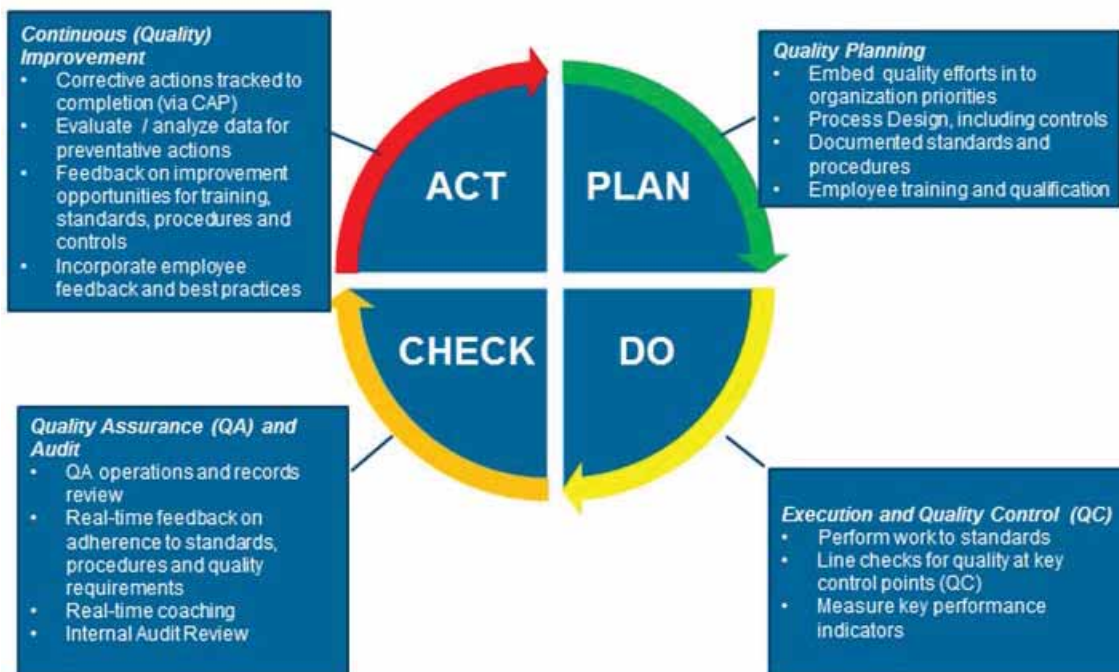
*How does PG&E monitor the quality of work performed by outside contractors? Has PG&E found any instances where a contractor failed to do the work properly? If so, what actions did PG&E take in response?*

##### **Response**

##### Overview of Quality Monitoring

PG&E has created a series of programs to evaluate the quality of general construction to as it relates to company standards and procedures. The Gas Quality Management (QM) organization is responsible for centralized Quality Assurance (QA) activities within Gas Operations. Gas Operations' quality monitoring programs apply to work conducted by both Contractors and PG&E employees. The fundamental principles in the QM System leverage the "Plan, Do, Check, Act" framework (see Figure 4-1). This is an iterative four step management method for the control and continuous improvement of processes and products.

**FIGURE 4-1  
PLAN, DO, CHECK, ACT FRAMEWORK**



PG&E's Quality Management Department and PG&E's gas transmission construction organization conduct field assessments on both Contractor and

PG&E projects as the work is being performed or on work that has recently been completed.

#### Transmission Quality Monitoring

Quality Control (QC) is a function that provides routine and consistent checks during the course of executing work to ensure integrity and correctness of that work. QC is an iterative process. Therefore the control activities will continue to be evaluated and updated relative to system safety and compliance risks in order to continuously improve PG&E's ability to identify risks. Identifying, evaluating and strengthening controls is a major area of focus throughout the Gas Operations organization. Resources are being dedicated to key processes to administer the identified controls.

Specific to Gas Transmission Construction Projects, QC is embedded in the construction process. QC is available as needed to verify documentation during the entire course of the project. QC evaluates As-Built documentation on the work performed by both Contractors and PG&E employees.

QA is conducted by PG&E's QM Department. It is a process that runs independent of QC and is conducted by people not directly involved in the process. It validates that the controls within the process are effective.

#### Quality Control

QC is part of PG&E's Gas General Construction organization and is divided into As-Built QC and Field QC.

- As-Built Quality Control

The Gas QC team of about 20 engineers reviews As-Built documentation for Gas Transmission Construction Projects. Gas Transmission's As-Built QC group is centrally-located, in close proximity to those stakeholders involved in the as-built process (Engineering; Mapping; Pipeline Features List; and Scanning and Attributing). The group uses its technical skills to evaluate and analyze documentation for compliance with applicable PG&E standards and procedures and the Code of Federal Regulations. See Table 4-1 for a list of steps the QC follows.

**TABLE 4-1  
AS-BUILT QUALITY CONTROL STEPS**

<b>Step 1</b>	<ul style="list-style-type: none"> <li>• Perform field preliminary review of As-Built documentation while the project is ongoing.</li> <li>• Perform final field review of As-Built package after last “Tie-In” or “in operation” date with construction lead (Lead Inspector, Construction Manager or Field Engineer (FE))</li> <li>• Ensure As-Built package includes all project applicable documents and drawing redlines per As-Built Checklist.</li> <li>• To track and ensure traceability of the of As-Built packages hand off through the QC process, Transmittal for Transmission As-Built Packages is completed.</li> </ul>
<b>Step 2</b>	<ul style="list-style-type: none"> <li>• Perform comprehensive review of complete As-Built packages which includes inspection documents, redline drawings, and strength test documents. The review involves validation of data per inspection and cross check with associated documents to check for discrepancies, inaccuracies, missing data, missing documents for critical attributes related to welding, coatings, strength test, footages, welding procedures, qualifications, etc.</li> <li>• Complete a QC correction action form to document all the findings.</li> <li>• Use internal QC data validation tool to verify the accuracy of data entered in various inspection documents such as Daily Field Weld Inspection report, Coating report, Weld Map, STPR (Strength Test Pressure Report). The documents are cross checked in reference to weld number, pipe specification, welding procedure specifications, welder qualification, pipe footages, strength test design criteria, etc.</li> <li>• If discrepancies, errors, inaccuracies or missing document(s) or information, identified work with construction leads or craft inspectors and test supervisors to resolve the identified issues.</li> <li>• If issues are identified that are out of compliance and might require re-work, meeting will be arranged with the project team that will include construction lead, design engineer, code and standard specialist, and subject matter expert to discuss the findings and resolve the issue.</li> </ul>
<b>Step 3</b>	<ul style="list-style-type: none"> <li>• Submit As-Built package to design engineer to perform engineering review. Design Engineer will return the As-Built to QC Reviewer with engineering CAF that includes comments to be corrected.</li> <li>• Work with construction if needed depending on the engineering review comments. QC Reviewer follows up with the design engineer to confirm approval of the corrections and changes.</li> </ul>
<b>Step 4</b>	<ul style="list-style-type: none"> <li>• Pre-Mapping QC check of the finalized As-Built package by QC Reviewer lead to make sure all the documents were validated and the documents are included per the As-Built checklist with transmittal. As-Built package is logged in QC internal database.</li> </ul>
<b>Step 5</b>	<ul style="list-style-type: none"> <li>• Submit As-Built package to GT GIS Mapping.</li> <li>• QC follows up with Mapping and PFL on any comments downstream.</li> </ul>

In addition to working with stakeholders to identify and correct any errors in the field, the Quality Control Department compiles its findings into reports to primarily measure and analyze the following:

- Jobs in QC’s review;
- Year-to-date and monthly metric duration of the As-Built packages by region and project type; and
- Trends on the quality of the As-Built documents by region.

- Field Quality Control

From January 2015 through April 2016, QC of construction projects in the field were functions of project supervisors and the As-Built QC team.<sup>2</sup> Starting in April 2016, PG&E established a QC team for Transmission and Distribution Construction (T&D Construction QC).

T&D Construction QC is currently in the process of being developed and is anticipated to be fully operational in the fourth quarter of 2016.<sup>3</sup> The T&D Construction QC team implements and maintains oversight of Transmission and Distribution Construction activities. QC Specialists conduct real-time assessments in the field to ensure that qualified and knowledgeable personnel are performing tasks in accordance to PG&E standards and procedures in a safe and quality manner. Field assessments include review of documentation to ensure that all applicable documentation is completed in accordance with PG&E's policies.

T&D Construction QC encompasses a wide range of quality inspections and projects and is not specific to Strength Testing, Pipe Replacement, ILI, or making pipe piggable. However to the extent T&D Construction QC inspects any of these four programs, T&D Construction QC follows the protocol described above.

All quality issues identified are entered into the Corrective Action Program (CAP). The T&D QC team partners with other subject matter experts to identify the cause of the issue and implement the necessary corrective actions to minimize and/or prevent reoccurrence.

#### Quality Management

QM utilizes a representative sampling approach to identify the work that will be assessed. QM checklists are designed to measure adherence to construction and inspection standards and procedures. The attributes are assigned a pre-determined priority level (High, Medium, Low) and each level has a different point value. See Table 4-2 for a description of priority levels.

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<sup>2</sup> See Table 4-1 As-Built Quality Control Steps – Step 1.

<sup>3</sup> The T&D Construction QC team is composed of Gas Operations PG&E employees. To the extent that contractors are used in T&D Construction QC, both contractors and PG&E employees are held to the same standards.

**TABLE 4-2**  
**DESCRIPTION OF ATTRIBUTE PRIORITY LEVELS**

<b>Weighting Category</b>	<b>Definition</b>
High	Quality attribute that requires a HIGH level of priority due to its importance and how it could possibly affect employee/public safety and/or PG&E's asset integrity
Medium	Quality attribute that requires a MEDIUM level of priority due to its importance and how it could possibly affect employee/public safety and/or PG&E's asset integrity
Low	Quality attribute that requires a LOW level of priority due to its importance and how it could possibly affect employee/public safety and/or PG&E's asset integrity

Depending on the nature of the project, applicable attributes are checked against the work being performed. The checklist is generally categorized into five different groups: Verification, Instrument Calibration, Coatings (subdivided into eight further checklists), Welding, and Excavation and Backfill. See the Appendix for the Transmission QA Attribute Checklist, Figure 4-3. Examples of attributes for each subgroup include:

- Verification:
  - Was proper Personal Protective Equipment utilized for the task performed?
  - Was the copy of USA ticket on site?
  - Was the USA active while digging?
  - Is the As-Built Package being maintained?
  - Was the Transmission Gas Clearance procedure followed?
- Instrument Calibration:
  - Was the air monitor calibrated within tolerance for the current month?
  - Was the Combustible Gas Indicator instrument calibrated within tolerance for the current month?
  - Was the locating instrument calibrated every 30 days, not to exceed 45 days?
  - Was Pipe-to-Soil Instrument calibrated per standard?
- Coatings:
  - Did the applicator use the coating product prior to expiration date?
  - Was a Coating Report filled out when required?
- Welding:
  - Was a visual inspection performed when required?
  - Was the NDE examination report (reader sheets) completed when required?



- Was the Daily Field Weld Summary Report completed as required?
- Excavation and Backfill:
  - Did facility have proper depth of cover?
  - Were proper safe excavation practices used?
  - Was shoring/benching utilized when required?

The QM department conducts assessment on all types of construction projects including: Strength Testing; Pipe Replacement; ILI; and Make Piggable, however, certain sub-groups of the checklist may or may not apply.

See Table 4-3 below for an illustration of which attribute sub-groups are typically completed for the activities relevant to this report:

**TABLE 4-3  
SUBGROUPS ASSOCIATED WITH STRENGTH TEST, ILI, MAKE PIGGABLE AND  
PIPE REPLACEMENT**

	Strength Test	In-Line Inspection	Make Piggable	Pipe Replacement
Verification	X	X	X	X
Instrument Calibration	X	X	X	X
Coating			X	X
Welding			X	X
Excavation and Backfill			X	X

Each assessment is scored and a Weighted Error Rate is used to measure the quality of work performed. All findings are addressed at the time of discovery where applicable and the assessment results are communicated to local leadership for their action. The assessment results are then compiled together and used to generate the Monthly QA Summary. Trends and quality performance are communicated to leadership at various levels. All findings are entered into PG&E's CAP<sup>4</sup> which is then used to address internal: process; material; and systemic concerns that are identified.

#### PG&E's QM Assessments and Findings

PG&E's QM group produces the *Transmission Quality Assurance Summary* report on a monthly basis to communicate their findings to PG&E's Gas

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<sup>4</sup> High Priority Findings are entered as soon as possible while Medium and Low Findings are entered quarterly.



Operations leadership. The *Transmission Quality Assurance Summary* reports detail any findings and provide error rates for each work group, based on attributes: sampled, checked, and passed. Transmission QM findings for the reporting period are included to ensure that company leadership is aware of the issues and that the appropriate corrective actions are initiated when warranted. These Summary reports enable opportunities for continuous improvement for contractors and PG&E employees to support the goals of a safe, reliable, and affordable gas system.

In 2015, PG&E assessed 188 projects and performed over 662 assessments. As discussed above, each assessment contains multiple attributes. See Table 4-4 for a sample summary of QA Findings.

**TABLE 4-4**  
**SAMPLE SUMMARY OF QUALITY ASSURANCE FINDINGS**  
**JANUARY 1, 2015 – DECEMBER 31, 2015**

Attribute	Sampled	Issues	Errors/100
Coating Dry Film Thickness	240	49	20.42
Surface Prep Anchor Profile	240	7	2.92
Welds Visually Inspected by Qualified Inspectors <sup>(a)</sup>	11,275	0	0.00
Welds Performed by Qualified Welder	11,276	0	0.00
Daily Field Weld Summary Report Data Points Correct	334,089	21	0.01

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- (a) The 2015 Year to date data for “Welds Visually Inspected by Qualified Inspectors” is derived from the Daily Field Weld Summary Report as opposed to actual QA inspection in the field. As explained in this Requirement, QA assessment underwent a major program update in the beginning of 2016 to allow for real-time assessments.

From late 2015 to the end of February 2016, the Gas Transmission Quality Assurance Program underwent a program update that included reengineering sampling plans, database systems development, and mobile data acquisition platforms. During this time, the QA Transmission Team did not perform any production transmission assessments and therefore there are no production data for this time period.

As a result of the updates, the Transmission QA Summary tracks data derived from attribute checklists. From March through September 2016, PG&E completed 628 assessments. See Table 4-5 for Findings by Attribute Group 2016 Year to Date.

**TABLE 4-5**  
**FINDINGS BY ATTRIBUTE GROUP 2016 YEAR TO DATE<sup>(a)</sup>**

<b>Attribute Groups</b>	<b>Sampled</b>	<b>Issues</b>	<b>Error Rate</b>
<b>Verification</b>	5198	10	0.19%
<b>Instrument Calibration</b>	432	1	0.23%
<b>Coating</b>	1993	16	0.80%
<b>Welding</b>	4,503	30	0.67%
<b>Excavation &amp; Backfill</b>	1019	3	0.29%
(a) Year to Date is March through September 2016 because March is when the new reporting was rolled out.			

From March 2016 through September 2016, PG&E has found instances where contractors or PG&E employees did not perform quality work, according to PG&E's internal standards.<sup>5</sup> See Table 4-6 for Weighted Attribute Samples by general construction (PG&E employees), contractors, and inspections for March 2016 through September 2016.

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<sup>5</sup> PG&E commenced Transmission QM production assessments beginning March 2016.

**TABLE 4-6**  
**WEIGHTED ATTRIBUTE SAMPLES BY GENERAL CONSTRUCTION, CONTRACTORS,**  
**AND INSPECTION<sup>(a)</sup>**  
**MARCH – SEPTEMBER 2016<sup>(b)</sup>**

	High			Medium			Low		
	GC <sup>(c)</sup>	Cont <sup>(d)</sup>	Insp <sup>(e)</sup>	GC	Cont	Insp	GC	Cont	Insp
Sampled	1098	2291	2207	1366	3581	2410	37	118	37
Issues	5	4	4	13	12	22	0	0	0

- (a) This data is a sampling of a wide range Gas Transmission assessments and is not broken out by process family or program.
- (b) PG&E commenced Transmission QM production assessments beginning March 2016.
- (c) General Construction is comprised of PG&E employees who perform construction activities.
- (d) Contractors who perform construction activities for PG&E.
- (e) PG&E and contractor employees who perform QC inspections.

The Transmission QA Summary reports include a section titled “Monthly Summary of Findings” that details: (1) specific instances where quality work was not performed to standards; and (2) the actions QM took to address these issues. QM’s actions may include: stopping work; coaching discussions; review of findings; oversee corrections and make recommendations to review applicable standards and procedures to prevent reoccurrence.

From January 2015 through December 2015, all findings were documented and a QM corrective action form was issued to the responsible workgroup for their action/correction. The Construction Organization would engage subject matter experts to evaluate whether a finding or specification was acceptable. If the subject matter expert determined the finding was acceptable, the subject matter expert would issue a variance. If the subject matter expert determined the finding was unacceptable, the subject matter expert would engage the Construction Organization and Integrity Management teams for further evaluation.

Beginning in March 2016, PG&E changed the basic protocols of the Quality Program to a real time, (i.e., as the work is being performed) approach. The prior practice of conducting assessments from submitted documentation caused a delay in correcting issues. All findings are now addressed at the time of discovery where applicable and the assessment results are communicated to local leadership for their action.

As stated above, all findings are entered into PG&E's CAP, which is then used to evaluate, classify, and identify corrective actions to prevent further occurrence of the findings discovered.

**5. Quality Assurance – Internal Resources**

*What quality assurance procedures does PG&E have in place to determine whether the project work is being done correctly by its own employees?*

*Has PG&E found any instances where the work was not done properly? If so, what actions did PG&E take in response?*

**Response**

Refer to the response to Requirement 4. Both the QM and QC departments hold internal and external workgroups to the same standards described in Requirement 4.

## 6. Program Management Office Overview

*Describe the role of the Program Management Office (PMO) (see p. 7-10 of Prepared Testimony) in containing project costs. Provide specific examples where the PMO's recommendations led to cost savings.*

### Response

#### Program Management Office Background

PG&E implemented the Program Management Office (PMO) during the course of the PSEP proceeding and has since expanded it to the broader gas transmission organization. As described in PG&E's GT&S rate case filing, Chapter 9, the PMO includes both the Gas Transmission Project Execution Group and the Gas Project Governance and Controls Group (PG&C), which supports Gas Transmission projects through scheduling, earned value analysis, construction contractor alliance support, and project governance and reporting. The Project Governance and Controls Department is organized to execute the individual projects in a matrix management environment.

The Project Execution role:

- 1) Ensures the timely and cost-effective execution and monitor quality of PG&E's gas transmission construction projects, and
- 2) Confirms execution of such projects is consistent with PG&E's goal to provide safe, reliable, and affordable gas service.

In addition, the PG&C portion<sup>6</sup> of the PMO oversees project process compliance and makes recommendations for: (1) project delivery process improvements that enhance performance; and (2) ensuring that program control tools and procedures are operating to achieve program objectives.

The Gas Transmission Project Execution and PG&C are related, but are not limited to:

- Scheduling projects;
- Tracking project costs and budgets;
- Coordinating and managing project team;
- Ensuring project scope is delivered;
- Securing project resources;

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<sup>6</sup> See the appendix, Figure 6-1, for the Project Governance and Control (PG&C) Organizational Chart.

- Identifying and managing project and program risks;
- Negotiating contracts and change orders;
- Managing project information and documents;
- Governing projects and setting controls;
- Developing project delivery standards;
- Implementing project and project delivery process improvement initiatives;
- Measuring and reporting on project metrics including safety, quality, and program performance;
- Acting as a liaison with CPUC on project and program information;
- Collecting and sharing best practices and lessons learned to both the employee and contractor workforce; and
- Managing Alliance contracts and quality.

#### Examples of Cost Savings Related to PMO Groups

As shown in Table 1 in the introduction, PG&E's actual costs in many instances exceeded adopted costs. Nevertheless; PG&E realized cost savings through the PMO that helped ensure lower costs than PG&E would otherwise have incurred. Here are some examples:

- 1) The PMO has implemented a number of processes that improve the management of all projects, including:
  - a) A Change Control Board that requires management to approve project scope and cost changes and to document these decisions;
  - b) A Quantitative Risk Analysis process for large projects to understand the financial risks and probabilities of achieving a particular project cost which helps leaders better understand the cost magnitude associated with each risk such as water management and prompts Project Managers and leaders to identify mitigation strategies to help avoid these costs, and
  - c) A Project Delivery System (PDS) model that has created standardized: project checklists; guidance documents; workflows; and forms for Project Managers and project teams, based on industry-best practices for managing projects. By using the PDS, the PMO emphasizes upfront project planning and stakeholder engagement, which contributes to:
    - (1) projects being managed consistently across all work types which improves efficiencies in scope, schedule and cost management;
    - (2) increased visibility;
    - (3) minimization of risk; and
    - (4) delivery

consistency for efficiency and effectiveness. Industry consultants believe that a well-implemented standardized PDS could reduce the cost of each project by 2 to 5 percent. The PDS implementation is expected to realize savings over a period of time and could be 3-5 years depending on the PDS enabler/tool being realized.

- 2) In early 2015, the PMO identified that a hydrotest would be required on Line 402 in Redding in 2016 and because this line is a radial feed that it would need to have a significant quantity of CNG/LNG to support 40,000 customers during the six weeks of the hydrotest. The PMO made the decision to bundle several valve automation projects and an ILI upgrade project within the same clearance as the hydrotest to avoid a similar outage and Liquefied Natural Gas (LNG) support multiple times. This decision saved \$3 million in reduced contractor costs by bundling the work together, and it avoided \$5 million or more in potential clearance and LNG support costs if the projects had been scheduled separately.
- 3) In 2015, the PMO made the decision to use an ultrasonic ILI tool that is pushed through the pipe by water on higher risk hydrotests to identify possible anomalies before the test to avoid a possible rupture during the test. This method identified several defects which were cut out and replaced with new pipe before the test. The cost avoided by not having to repair a rupture and re-conduct the hydrotest is estimated to be \$2 million in 2015.
- 4) In 2015, the PMO implemented a centralized potholing team that standardized the process and efficiency for potholing projects during the engineering phase of the project. The team has identified the improvement of potential soil and water issues via potholing, and has helped plan for perpendicular crossings of the pipe replacement route. Potholing also serves to manage high water table and contaminated soil in the project planning phase. PG&E has not estimated the cost savings at this time.
- 5) In 2016, the PMO made the decision to implement test trenching prior to construction of the western phase (13 miles) of Line 407 to determine the expected rate of flow from groundwater. The test trenching determined that there was less groundwater than expected and helped us to reduce costs by \$4 million by reducing the amount of water processing equipment that would have been permitted, rented, and moved onto the project.



- 6) In 2016, the PMO made the decision to plan and schedule ILIs earlier in the year so that the ILI data would become available in the summer, rather than the fall or winter season. This decision reduces the costs of expensive CNG/LNG support during high load periods to conduct clearances and repairs during the fall/winter season.
- 7) In 2015, the PMO made the decision to make non-traditional ILI tool runs to inspect Line 101 at four different crossings of the freeway. The use of these tools avoided the need to do a costly shutdown of the freeway to conduct a close interval survey inspection of the pipeline. PG&E has not estimated cost savings, but the avoidance of the community impact is significant.

## 7. Program Management Office Costs and Benefits

*Provide the costs incurred by the PMO year-to-date and describe the specific work they did for the benefit of PG&E customers.*

### Response

The GT PMO incurred \$22.97 million from January 1, 2015 through September 30, 2016 (\$13.59 million for 2015 and \$9.37 million in 2016). These costs were incurred by the Project Governance and Controls portion of the PMO (excluding the project controls analysts which charge directly to projects). The Project Management portion is charged directly to projects as described in Chapter 9 of PG&E's 2015 GT&S rate case testimony.

Examples of work the PMO did that benefited PG&E's customers include, but are not limited to the following:<sup>7</sup>

#### 1) Improved Visibility of Construction Site Safety:

The PMO helped implement a series of safety-focused activities designed to improve construction site safety for employees, customers, and local communities. These include leadership site visits, "good catch" or "near hit" reporting, after-hours site security audits, and job hazard mitigation analyses. In addition, the program maintains metrics that measure performance against safety improvement targets for construction-related public safety incidents and at-fault "dig-ins."

#### 2) Improved Visibility of Environmental Compliance:

The PMO presents environmental inspection findings and feedback (gathered from PG&E Environmental Field Specialists (EFS)) to PG&E and construction contractor leadership regarding compliance with construction site Best Management Practices (BMP), which are then implemented to protect the local environment near the construction site. Based on this visibility, PG&E and construction contractors have improved compliance with these BMP plans over the reporting period.

#### 3) Consistency of Customer Communication Prior to Construction Activities:

PG&E communicates with customers prior to construction activities.

This includes: pre-venting notifications for pipeline depressurization; hosting

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<sup>7</sup> The PMO partners with cross-functional leads from PG&E's Customer Care, Government Relations and Corporate Communications departments.

open houses; and sending brochures and other publication. These activities were extended across all Gas Transmission programs' construction activities.

4) Improved Traffic Management Planning:

The PMO has improved the quality and consistency of: traffic management planning; supporting permit documentation; and overseeing activities for appropriate execution in the field.

5) Improved Pipeline Clearance Management:

The PMO has improved the alignment of project scheduling as it relates to ongoing gas system operations. The PMO helps plan construction activities such that it avoids peak winter demand and high commercial activity periods (e.g., agricultural harvesting, drying).

6) Customer Outage Management:

The PMO works with Gas Operations to increase its CNG/LNG equipment fleet. This enables the program to conduct construction-related pipeline outages with minimal, if any, impact to customer service. The PMO helps improve project planning steps to identify customers' gas load demand requirements, and to integrate this information into project schedules by identifying the need for CNG/LNG. The PMO evaluates the availability of sufficient equipment to: meet customer demand; minimize planned customer outages; and reduce most, if not eliminate, unplanned customer outages.

## Budget and Spending

### 8. Factors Impacting Cost Effectiveness

*Describe any factors, either internal or external, that may have prevented or affected PG&E from conducting the work in a more cost effective manner. Quantify the cost impact of such factors.*

#### **Response**

PG&E summarizes primary cost drivers associated with Strength Testing, Pipe Replacement and In-Line Inspection programs that have in many cases resulted in significantly higher actual costs than the amounts adopted in D.16-06-056. As part of ongoing project management activities, PG&E's transmission pipeline programs have consistently identified project uncertainties and implemented risk mitigation activities. Despite these efforts, PG&E has not been able to fully mitigate the potential impact of cost uncertainties. Table 8-1, below, summarizes the cost variances associated with each program, followed by programmatic variance explanations.

**TABLE 8-1  
UNITS AND COSTS BY PROGRAM  
(DOLLARS SHOWN IN THOUSANDS)**

Ref Line	Program	MAT code	2015 Units	2016 Units	Adopted/Imputed Unit Cost per year <sup>[1]</sup>	Adopted/Imputed Amount Jan 2015-Dec 2015 <sup>[4]</sup>	Adopted/Imputed Amount Jan 2016-Dec 2016	Adopted/Prorated for Jan. 2015-Sept 2016 <sup>[5]</sup> (i) = (f) + (h)	Adopted/Prorated for Jan. 2016-Sept 2016 <sup>[5]</sup> (h) = ((gM)/)*3	Units Completed Jan. 2015-Sept 2016	Recorded Costs Jan. 2015-Sept 2016	Unit Costs Jan. 2015-Sept 2016	Variance to Total Cost Jan 2015-Sept 2016 (h)-(i)	Variance to Unit Cost <sup>[6]</sup> ((h)-(i))
	(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)
1	In-Line Tool Upgrades (capital)	68C, 44A	61 miles	187 miles	N/A	\$59,236	\$59,965	\$67,475	\$126,711	156 miles	\$237,581	N/A <sup>[3]</sup>	\$110,870	N/A
2	In-Line Inspections (expense) <sup>[5]</sup>	HPB	340 miles	254 miles	N/A	\$18,312	\$21,515	\$16,136.25	\$54,348	371 miles	\$74,518	N/A <sup>[3]</sup>	\$40,170	N/A
3	ILI Direct Exam & Repair	HPi	90 digs	77 digs	N/A	\$13,310	\$10,126	\$7,505	\$20,505	124 digs	\$52,734	N/A <sup>[3]</sup>	\$31,829	N/A
4	Pipeline Replacement (Capital)	75E, 75H, 75M, 75Q	24 miles	24 miles	N/A	\$177,962	\$182,055	\$136,541	\$314,503	13 miles	\$209,318	N/A <sup>[3]</sup>	\$ (105,185)	N/A
5	Strength Testing (expense) <sup>[7]</sup>	HPF / JTC/ 3MA	170 miles	170 miles	\$840k/mile	\$142,800	\$142,800	\$107,100	\$349,900	140 miles	\$201,130	\$1,436k/mi <sup>[7]</sup>	\$ (46,770)	\$767k/mile

[1] D. 15-00-056 (OP 2) requires PG&E to conduct hydrostatic testing for 170 miles of transmission pipe per year. Table 8-1 presents the adopted unit cost of \$840,000 per mile for hydrotesting, and then multiplies that adopted unit cost by 170 miles to derive an annual "total adopted program cost" of \$142.8 million. This derived number differs from the actual hydrotesting costs adopted by the Commission and presented in Requirement 2, which excludes the costs to test previously un-tested post-1955 pipe (\$100.2 and \$102.8 million dollars for 2015 and 2016, respectively).

[2] There were no adopted unit costs for the ILI Upgrade program in the Decision. For ILI upgrades cannot have unit costs as each project has a uniquely engineered scope. For example, a single project can have several valves replaced or no valves replaced, along with the addition of a launcher and receiver to make the line piggable. Therefore, an upgrade project could be 1 mile or 10 miles and still be the same cost.

For the Vintage Pipe program, no adopted unit costs are provided at the program level as the Decision provided for three groupings of unit costs based on pipe diameter.

For ILI Direct Exam and Repair, the unit cost was based on an average cost per dig taking into account whether the dig location was rural, urban, or a combination of the two. Therefore, a singular unit cost per dig does not apply.

[3] Adopted amounts include MAT 44A for Vintage Pipe, Class Location and Shallow Pipe.

[4] Adopted amount January 2016 through September, 2016 reflects costs prorated to include three quarters of the year.

[5] Column (i) is the sum of Column (f) plus Column (h). Column (i) reflects the costs for this current compliance reporting period.

[6] Rate Case Units only show miles for Traditional In-Line Inspections. The rate case for Non-Traditional ILI and ILI of Casings was based on number of projects and not miles. The numbers of projects for Non-Traditional ILI (included in HPB) 6 projects and 15 projects in 2015 and 2016, respectively. ILI of Casings (included in HPB) has 4 projects each in 2015 and 2016. Costs for HPB are not included in the actual costs which totals to \$7,449 during the reporting period.

[7] Unit Cost was derived from recorded costs referenced in Table 20-1 (see Balancing Account and Base Expense (Without Burdens) values in Column (TD) and completed units in column J of Table 8-1. Unit Cost is represented in new cost model.

### **Strength Testing Variances**

- PG&E's strength testing during 2015 and 2016 has focused on addressing:
- Meeting compliance deadlines to address integrity threats identified by PG&E's Integrity Management assessment procedures; and
  - Untested pipeline segments in High Consequence Areas (HCA) included within the National Transportation Safety Board's (NTSB) recommendation to PG&E.

These "IM-flagged" and NTSB<sup>8</sup> pipeline segments are significantly shorter in length on average than in prior years and primarily located in densely-populated urban areas. Since much of the cost of a strength test is a fixed cost, the unit cost is significantly impacted by the test length, and somewhat affected by test location. PG&E currently plans to complete a series of longer tests in 2017 and 2018, incorporating "IM-flagged" and NTSB pipeline segments where practical. This approach has the effect of increasing the number of miles of pipe tested and reducing the overall test cost-per-mile. This approach is taken to target achievement of the 680 miles mandated in the Decision. The long line testing is in-line with PG&E's risk approach as it balances the need to target short segments of "NTSB" mileage while eliminating greater amount of risk to the system (complying with the CPUC directive to have a valid test record for all untested pipe) by testing long sections of untested pipe and in the most cost effective manner. This approach will minimally lengthen the amount of time it will take to complete testing of the shorter and higher unit cost "NTSB" pipeline segments.

### **Vintage Pipe Replacement Variances**

The timing of D.16-06-056 and uncertainty regarding approved funding prompted PG&E to reduce the amount of budget allocated to the vintage pipe replacement construction in 2015 and 2016. Project approval during the reporting period remained consistent with risk-based prioritization procedures outlined in response to Requirement 1. The reduced spend was also caused by project delays on three pipe replacement projects on Line 105N and Line 105C due to increased permitting durations, and the delay of four lower risk pipeline retirement

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<sup>8</sup> HCA and Class 3 and 4, non-HCA pipe that does not have a traceable, verifiable, and complete record of a strength test.

projects on Line 107. Since the issuance of D.16-06-056, PG&E is working on constructing several complex and high-cost vintage pipe replacement projects in urban areas in 2017 and 2018.

During the reporting period PG&E's Pipe Replacement team has identified factors that have prevented completing work in a more cost effective manner, including:

1) Unidentified Pipeline Conditions:

Factors such as additional engineering and construction activities, including the repair and replacement of pipe, valves and fittings due to condition, construction obstructions, and re-engineering due to previously unidentified non-PG&E structures or other utilities (i.e., increased construction duration and costs) on projects R-824, R-309A, R-503, and R-332 in urban environments.

2) Geographical Field Conditions:

Factors such as: high water table, trench dewatering costs, poor or weak soil, restrictive permitting conditions, site specific contamination, and restrictive waste disposal requirements. For example, pipe replacement project R-503, on Line 50A in Gridley, incurred additional unanticipated costs totaling \$12.8 million to address groundwater that included the pumping, handling and disposal of approximately 55 million gallons of groundwater.

In addition increased costs associated with construction in dense urban environments, including additional traffic control, restrictive working space, poor soil and handling of contaminated soil (i.e., increased construction durations and costs) on projects R-503, R-824, and R-309A.

3) Permitting:

Factors such as increased permitting conditions and restricted work hours to avoid road/lane closures during heavy commute hours (i.e., compacted construction schedules) on project R-309A.

4) Schedule Constraints:

Management of construction schedules to meet schedule commitments (e.g., internal integrity management compliance dates for the remediation of pipeline anomalies identified through ILI, with associated increased construction and land acquisition costs on projects R-503, R-599A, R-009, and R-824).

#### 5) Gas System Operational Constraints:

Schedule changes driven from operational constraints on PG&E's gas system which delayed and extended clearance activities on project R-332.

#### **ILI Upgrade Variances**

During the reporting period PG&E has experienced significantly higher-than-planned costs associated with ILI Upgrade. Cost drivers have included:

- Increased land acquisition purchase prices and Temporary Construction Easement (TCE) fees due to limited location alternatives and accelerated project timelines on projects I-043, I-048B, and I-049A.
- Changes in construction schedules, including acceleration to meet planned inspection timelines on project I-043E and delays to resolve permitting issues with local permitting agencies and hydraulic constraints on Peninsula pipelines on project I-048B.
- Higher-than-planned costs of pipeline excavation and re-configuration to avoid underground utilities and structures on projects I-041G, and I-056F, and additional shoring due to weak soils on project I-129A.
- Higher-than-planned costs associated with ground water management on projects I-048B, I-44A, and I-044C; and
- Higher-than-planned costs of pipeline re-configuration requirements due to lower navigation tolerances of newer inspection tools on project I-056F.

#### **ILI Variances**

During the reporting period the ILI Inspections have incurred higher-than-planned costs associated with inspection tools becoming lodged in the pipeline during inspection runs, requiring removal via cut-out. These cut-out operations require separate mobilizations and replacement of pipeline features that impede the passage of the ILI tool. Over the course of this reporting period, PG&E has seen a higher number of cut-out operations than in previous years due to the number of inspections using newer multi-diameter tools. PG&E is currently evaluating the effect of potential cut-outs on future forecasting of first time inspections.

In addition, to meet Integrity Management program compliance deadlines, the ILI Inspection Program has undertaken a series of non-traditional ILI inspections of creek crossings and freeway crossings that have significantly-increased costs.



Non-traditional ILI is nearly three times more costly than a traditional ILI and inspections on a per-mile basis.

**ILI Direct Exam and Repair Variances**

During the reporting period, ILI Direct Exam and Repair (“Digs”) unit costs have been higher than expected due to the following factors:

- Challenges in acquiring the necessary field data on a timely basis to facilitate repair decisions;
- Additional assessment and analysis determined necessary to complete repair decisions consistent with PG&E’s Repair Standard;
- Local permits requiring the use of non-native backfill for wet spoils (e.g., when using hydro-excavation as opposed to mechanical excavation);
- Increased incidence of welded sleeve repair decisions, in preference to “flat-top” welds to achieve proper sleeve fit-up. Instead, clearances are being implemented to reduce line pressure to zero psig prior to flat-topping of welds; and
- Increased incidence of repair decisions requiring the removal of benign linear indications and minor tooling marks upon application of judgment within PG&E’s Repair Standard.

## 9. Procurement Policy and Practices

*Describe PG&E's procurement policy and practices for pipe and other materials used for projects. Was a competitive bidding process used? If not, explain why. Describe what factors PG&E considers in procuring material ranked by importance. Identify the manufacturer(s) or suppliers of the pipe used for the replacement projects and for any material that cost more than \$100,000 per item*

### **Response**

PG&E procures relevant materials as specified for Strength Testing, Pipe Replacement, and ILI, including pipes, valves, fittings, and repair materials, such as steel and composite sleeves. PG&E uses Power Advocate software to conduct Request for Proposals (RFP), which aids PG&E to make supplier selections in a consistent manner. The supplier can also use Power Advocate to respond to RFPs and upload documents.

The selection qualification is a multi-disciplinary team effort, and it includes input from internal key stakeholders including Gas Operations.

Factors considered in procuring materials, ranked by level of importance, are:

#### 1) Technical:

PG&E mandates that technical requirements as prescribed by Gas Operations, codes and standards must be met.

#### 2) Quality:

PG&E mandates that quality requirements as prescribed by the LOB codes and standards must be met. The Supplier Quality Team evaluates and scores this requirement. The scoring and evaluation process may include audits and application of the PG&E Product Qualification Process.

#### 3) Safety:

PG&E's Contractor Safety Team evaluates and scores outside supplier safety qualifications.

#### 4) Commercial/Pricing:

PG&E attempts to procure an item at the best pricing option.

#### 5) Credit Risk:

PG&E evaluates the prospective supplier's financial stability for RFPs that will exceed \$20 million prior to beginning the bidding process. Should PG&E determine the supplier to be credit worthy, PG&E engages the supplier in the bidding process.

6) Diversity:

PG&E's Supply Chain Diversity Team evaluates a supplier's diversity score. Where possible, PG&E uses diverse suppliers.

7) Sustainability:

PG&E's Supply Chain Sustainability Team evaluates a supplier's sustainability processes. PG&E values and highly encourages sustainability for products it procures.

The successful supplier is chosen via a consensus with critical factors as described above. All of these critical factors are significant for PG&E to consider, however, the top three (Credit Risk, Technical, and Quality) are weighted more heavily than the others. PG&E conducts its safety review, but also relies on a third-party administrator (ISNetWorld.com) to review Occupational Safety and Health Administration statistics, written safety plans and safety programs for companies who are performing medium and high-risk work. In addition, PG&E utilizes a third-party contractor (GoldShovelStandard.com) to certify contractors who perform excavation work, ensuring that the Contractors meet all applicable laws and follow safe excavation practices.

All materials or services procured for Strength Testing, Pipeline Replacement, and ILI undergo the same process as mentioned above. Most materials procured in Gas Sourcing cost less than \$100,000 per unit. See Table 9-1 for a list of suppliers who provided PG&E with materials greater than \$100,000 per unit or the aggregate cost is greater than \$100,000.

**TABLE 9-1**  
**LIST OF SUPPLIERS WHO PROVIDED PG&E WITH MATERIALS**  
**GREATER THAN \$100,000 PER UNIT OR AGGREGATE IS GREATER THAN \$100,000**

<b>Name of Supplier</b>	<b>Material Provided</b>	<b>Material Use</b>
MRC Global Distributor	Pipes, Valves, Fittings and other ancillary items. Unit cost items are generally less than \$100K. Aggregate spend for above mentioned items exceed \$100K	ILI, Pipe Replacement, Strength Test
Pipeline Equipment, Inc. Manufacturer (PEI)	Closures and fabricated assemblies such as pig launchers and receivers - most units are less than \$100K, but aggregate is greater than \$100K	ILI buys closures to field fabricate launchers and receivers  ILI buys portable and permanent launchers & receivers
CM Distributors	Valves and valves modification – most units are less than \$100K, but aggregate is greater than \$100K	Valves used by all work streams - ILI, Pipe Replacement, Strength Test
Cameron, a Schlumberger Company Manufacturer	Valves, valve repair and modification – most units are less than \$100K, but aggregate is greater than \$100K	Valves used by all work streams - ILI, Pipe Replacement, Strength Test
Champion Process Inc. Manufacturer	Fabricated Assemblies such as portable separators used for liquids collection during ILI Inspections- materials greater than \$100,000 per unit	ILI uses portable separators to remove liquid/solids from gas stream

## 10. Pipeline Disposition Procedures and Costs

*What was the disposition (e.g., sold) of replaced pipe and other material? Identify all the amounts earned for the disposition of the material, costs incurred to transport or dispose of the material and regulatory treatment of the incurred costs and revenues.*

### Response

The disposition of transmission pipeline and other material replaced as part of the transmission pipeline programs is one of the following:

#### 1) Stored:

When certain pipe segments are removed, they are retained in designated PG&E storage yards pursuant to CPUC provisions of certain activities, including destructive testing. When transmission pipe segments are removed and not designated for long-term storage, PG&E will complete (routine) testing requirements, retain QC paperwork, and dispose of the pipe segments consistent with PG&E standards and procedures.

#### 2) Hazardous Waste:

Removed pipe and other materials that are identified as hazardous waste are handled, and disposed of, consistent with PG&E standards and applicable rules and regulations. The costs of transport and disposal of such materials are an integral part of the costs of each project and are included within the costs provided in response to Requirements 11 and 12. PG&E has incurred significant costs related to the cleaning of pipelines, and the cost of managing and disposing of hazardous waste as a result of such cleaning activities. All such costs in most instances are included in the cost of the project.

#### 3) Retired in Place:

Pipeline that is being retired in place (i.e., being left in the ground and disconnected from PG&E's gas system) is similarly subject to environmental testing and cleaning procedures. The costs of completing retirement procedures including cleaning are charged to the individual projects.

#### 4) Salvage:

Remaining pipeline and other materials are processed for scrap, net of transportation, disposal and cleaning costs.

Table 10-1 below provides a breakdown for revenue earned from the disposition of steel transmission pipe. For 2015, PG&E has recovered approximately \$123,989 and \$71,586 for 2016 (Q1 through Q3), as a result of salvage activities.

**TABLE 10-1**  
**SALVAGE RECOVERY STEEL TRANSMISSION PIPE**  
**(THOUSANDS OF DOLLARS)**

2015	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
Weight	330,340	352,940	139,140	297,750	112,660	175,990	163,360	244,780	255,000	148,140	342,140	288,080	2,850,320
Revenue	\$20,646	\$22,129	\$8,474	\$13,190	\$4,709	\$6,899	\$6,481	\$9,803	\$9,245	\$4,864	\$11,100	\$6,449	\$123,989

2016	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
Weight	365,300	201,700	708,380	299,960	311,240	365,280	196,500	120,580	265,320	—	—	—	2,834,260
Revenue	\$6,997	\$3,863	\$13,568	\$6,058	\$8,109	\$12,564	\$8,309	\$3,787	\$8,332	—	—	—	\$71,586

## **Project Status Summaries**

### **11. Projects Completed Year-to-Date**

*Provide a complete description or a specific reference to proceeding workpapers, of projects completed during this reporting period and those completed Year-to-Date, include the start and finish dates. On a project-by-project basis, provide the amount budgeted for the project and an itemized list of the costs, including labor and material, incurred completing of the project. Identify the amount that a project was over or under-budget. Indicate whether the work was done in-house or by outside contractor(s). Identify the outside contractor(s). Explain how the work was done in compliance with D.11-06-017 and PG&E's Decision Tree and, if so, provide the Decision Tree outcome identifier associated with each project. Identify costs that shareholders will absorb.*

#### **Response**

This response provides an explanation to Requirements 11 through 13. Unlike under PSEP, PG&E did not forecast specific projects in the 2015 GT&S rate case. Rather, PG&E forecast costs for Strength Testing, Pipeline Replacement, and ILI on a programmatic-basis, using various forecast methods. Requirements 11 through 13 request PG&E's Decision Tree. The identification of the specific decision tree node ("outcome identifier") was specific to PSEP. We do not have a similar "outcome identifier" in the GT&S rate case, and therefore, this portion of the question cannot be answered.

This report provides data for these programs as defined by the following programmatic MATs. See Figure 11-1 for a list of MAT codes by program.



**FIGURE 11-1  
PROGRAMMATIC MAINTENANCE ACTIVITY TYPES BY PROGRAM**

Pipeline Replacement		In-Line Inspection		Strength Testing	
MAT	Description	MAT	Description	MAT	Description
75E	Vintage Pipe Replacement	98C	Traditional	HPF	Pipeline Hydrotests
75H	Pipe Replacement – Class Location		Non-Traditional	JTC	Pressure Tests (Old Cost Model)
75M	Shallow Pipe	HPB	Traditional		Pressure Tests (New Cost Model)
75O	Pipe Replacement – Other Pipeline Safety Investment		Non-Traditional		
75P	ILI Capital Repair	HPG	ILI Casings		
75Q	Pipe Replacement IM	HPI	Traditional ILI (Direct Examination and Repairs)		
75R	Pipe Replacement in Lieu of Hydrotesting		Non Traditional ILI (Direct Examination and Repairs)		
75S	Direct Assessment				
75T	Exposed Pipe				
JT6	Pipe Replacements <50 feet				

The projects included in Table 11-1 have been planned and approved during Sessions 1 and 2 of the Integrated Planning process (refer to the response to Requirement 1 for a full description of this process) or by the Change Control Board as emergent work (refer to Requirement 6 for a description of this process). The projects included in Table 11-1 address the information requested in Requirements 11, 12, and 13.

- Requirement 11 – Projects Completed Year-to-Date: For the purpose of this report, the completion of a project is the date the pipeline segments are returned to operations.
- Requirement 12 – Projects Started, Pending Completion: Projects where construction has commenced (mobilized), but have not returned to operations (tied-in) as of September 30, 2016.
- Requirement 13 – Projects Planned, But Yet to Start: Projects internally-approved, but have not commenced construction activities.

Table 11-2 provides guidance to the data requested in Requirements 11, 12, and 13 and the corresponding column in Table 11-1 of the Appendix.

Please refer to the response to Requirement 21 for amounts funded by shareholders.

#### Requirement 11: Completed Projects

Table 11-1 included in the Appendix provides details on individual projects across transmission pipeline programs<sup>9</sup> that were completed by PG&E during the reporting period of 2015-2016 year-to-date (YTD). For each project, Table 11-1 includes project descriptions, construction start and finish dates,<sup>10</sup> the expenditure PG&E approved<sup>11</sup> and amounts of the costs (e.g., labor and materials incurred in completing the project); the amount that a project was over or under approved budget; and whether the construction work was completed in-house or by outside contractor(s), including the identification of the outside contractor(s). The completion of a project does not mean that the full costs for the project are recorded. The cost information provided is the most current information available as of the end of the reporting period and is subject to change based upon tie-in construction activities, change order settlements, and project closeout activities that take place after the project has tied-in but before the project orders are closed.

Effective January 1, 2016, PG&E changed its method for allocating overheads. As found in Table 11-1, base expense spend in 2015 includes overheads with the old allocation method while spend in 2016 includes overheads with the new allocation method. As a result, the Labor Cost, Material Cost, Contracts Cost, and Other Cost fields for base expense in this report may contain a mix of 2015 and 2016 overhead costs where applicable. Please refer to Section 29 of this compliance report for further details on PG&E's overhead allocation.

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<sup>9</sup> Transmission pipeline programs include: Strength Testing; Pipeline Replacement; ILI; and pipeline ILI upgrades. Project information is subject to change upon completion of project closeout procedures, including completion of construction documentation ("as-built"), mapping, and closeout.

<sup>10</sup> Construction finish date reflects completion of project tie-in, see Table 11-2.

<sup>11</sup> As PG&E progressed from the preliminary work scope and associated estimates and work plans, it developed more specific work plans and estimates. These refined estimates are documented as "Job Estimates". In a Job Estimate, the budgeted amount is approved at two levels, i.e., "PG&E Job Authorized Amount" and "Gross Amount including Contingency." "PG&E Job Authorized Amount" is used in this report to represent the internally-approved budgeted project cost for a more meaningful comparison to total costs.

See Table 21-1 of the Appendix for the total amount of costs that shareholders have absorbed 2015-2016 YTD based upon amounts adopted in the 2015 GT&S rate case (D.16-06-056).

Requirement 12: Projects Started, Pending Completion

Table 11-1 provides details on internally-approved projects across the transmission pipeline programs where construction has commenced, but has not been returned to operations (tied-in) as of September 30, 2016. For each project, Table 11-1 provides: project descriptions; construction start and anticipated completion dates; the amount internally-budgeted; and amounts of the costs incurred to date.

Requirement 13: Projects Planned, But Yet to Start

Table 11-1 provides details on transmission program projects that are internally-approved and have not commenced construction activities. For each project, Table 11-1 provides project descriptions, anticipated start and completion dates, and the amount internally-budgeted.

**TABLE 11-2  
DATA POINT/TABLE 11-1 COLUMN REFERENCE**

Column Name	Description
Line #	Reference number for this report.
Construction Phase	<p>Planned and Complete – Planned and Complete. Projects that were planned and approved through S2 or otherwise through the budgeting process and construction is complete. Tie-in date falls in current reporting period.</p> <p>Planned and Underway. Mobilization date falls within current reporting period but tie-in date is in future.</p> <p>Planned and Not Yet Started – Planned and not yet started. Mobilization date is in future.</p> <p>Non-project cost – Orders that have costs but not directly associated to a particular project.</p> <p>Pre 2015 Complete – Orders that have costs as a result of closeout. The Closeout phase of project include updating the As-Built information, restoring the site, closing the permits/environmental releases, closing the prime construction contract and purchase orders and reconciling the material, labor and invoicing charges.</p>
Order Number	Financial system of record reference number to track specific costs, e.g., on individual projects and provided in workpapers supporting PG&E Gas Transmission Application for projects commonly resulting from project split or addition.
Capital or Expense	Differentiates whether the project is capital or expense work.
MWC	Major Work Category (MWC) represents a complete, distinct, on-going process, often specific to a single LOB. MWCs are designated by two character alphanumeric code. A MWC can have multiple MATs.
MAT	Maintenance Activity Type (MAT) represents a complete, distinct, sub-process of major work category. MATs are designated by three-character alphanumeric codes. The first two digits of the MAT are the MWC. A MAT can only be assigned to one MWC.
Program Description	ILI Upgrade, ILI, Strength Test, Pipe Replacement
Project Name	Order Description for Strength Test, Pipe Replacement, ILI, and ILI Upgrade. Includes project reference IDs that start with a letter that reflects the construction activity or program (i.e., R – Pipe Replacement, T –Strength Testing, and I – ILI).
City/County	Location of project.
Construction Contractor	Contractor who performed the work ("GC" refers to PG&E in-house).
Mobilization Date	Project construction start date and/or project construction expected start date.
CNG/LNG Provided	CNG/LNG provided (Y/N). If yes, type is specified.
Tie-In Date/Estimated Date of Return to Operations (EDRO)	The tie-in date is the date the pipe became operational and the project was completed.
Job Estimate Amount (Budgeted Amount)	Amount budgeted for the project after completing project engineering, routing, permitting and construction bids, etc. Job Estimate represents estimated amount for the entire project, which may include time prior to current reporting period.
Total Cost 2015 Actual	Total cost on orders from January 1, 2015 to December 31, 2015.
Total Cost 2016 YTD Actual	Total cost on orders from January 1, 2016 to September 30, 2016.
Grand Total Cost	Itemized costs per project completed.
Labor Cost	
Materials Cost	
Contracts Cost	
Other Cost <sup>(a)</sup>	
Variance to JE	Variance between Grand Total Cost and Job Estimate (see Requirement 19).
Inception to date cost for Completed projects	Inception to date costs for projects that are tied-in/completed. These costs include costs on orders since inception, which may be prior to the current reporting period.
(a) Other costs include costs not included in Labor, Materials, or Contracts, such as overhead.	

## **12. Projects Started, Pending Completion**

*Provide a complete description, or a specific reference to proceeding workpapers, of projects that have begun but are currently unfinished, include the start and anticipated completion dates. On a project-by-project basis, provide the amount budgeted for each project. Explain how the work is being done in compliance with D.11-06-017 and PG&E's Decision Tree and, if so, provide the Decision Tree outcome identifier associated with each project.*

### **Response**

Refer to Table 11-1 of the Appendix and the response to Requirement 11 above for details on internally-approved projects where construction has commenced, but has not been returned to operations (tied-in) as of September 30, 2016.

### **13. Projects Planned, But Yet to Start**

*Provide a complete description, or a specific reference to proceeding workpapers, of projects that were forecasted for Phase 1 that have yet to start, include the anticipated start and anticipated completion dates. Rank the priority of these projects and explain the ranking. On a project-by-project basis, provide the amount budgeted for the project. Explain how the work was done in compliance with D.11-06-017 and PG&E's Decision Tree and, if so, identify the Decision Tree outcome identifier associated with each project.*

#### **Response**

Refer to Table 11-1 in the Appendix and the response to Requirement 11 above for details on projects planned, but not started. This table includes the projects that are internally-approved and have not commenced construction activities.

**14. Additional Projects Not in Original Workpapers**

*Describe, in detail, projects that PG&E has completed, are work-in-progress, or have yet to start that were not included in the workpapers submitted in R.11-02-019. Explain why these projects have been included in Phase 1 and whether these projects have lowered the priority of other projects identified in proceeding workpapers and, if so, why. Explain how this work complies with D.11-06-017 and PG&E's Decision Tree and provide the Decision Tree outcome identifier associated with each project.*

**Response**

This requirement is specific to PG&E's PSEP Program and is not applicable to the transmission pipeline programs (Strength Testing, Pipe Replacement, and ILI) outlined in OP 11 of D.16-06-056. PG&E forecast the costs to perform Strength Testing, Pipe Replacement, and ILI on a programmatic-basis, and D.16-06-056 adopted revenues on a programmatic-basis, not specific projects.

**15. Project Costs > 10% Above Estimate**

*For completed projects that are 10% or more over estimated costs, provide a detailed explanation why the overrun occurred.*

**Response**

PG&E did not forecast specific projects in the GT&S rate case; rather, it forecast costs for Strength Testing, Pipe Replacement, and ILI on a programmatic-basis, using various forecast methodologies. Therefore, PG&E is providing a response that is intended to address the issue raised in this requirement at the programmatic level.

Variance explanations where costs have exceeded 10 percent for either the unit cost or programmatic costs are contained within Requirement 8 of this Report and the programmatic variances are found in Table 8-1.



## 16. Pipeline Piggability Status

*Provide a list and map of pipelines that are currently piggable, highlighting pipe that was made piggable as a result of projects conducted under the PSEP. Provide the total mileage of transmission pipelines, the total mileage of pipelines that are currently piggable and percentage of the total that is piggable.*

### **Response**

D.16-06-056 established a 12-year ILI upgrade plan. Over the 12-year period, PG&E's goal is to make approximately 66 percent of its 6,597-mile transmission pipeline system piggable by traditional means. As of September 30, 2016, there are approximately 1,628 miles of piggable transmission line (see Table 16-2), which is 24.7 percent of PG&E's transmission pipeline system. PG&E is 37 percent complete in achieving its goal to make approximately 66 percent of its system piggable.

Table 16-1 shows PG&E's total transmission pipeline mileage made piggable during this reporting period.

Figure 16-3 in the Appendix provides a map of the transmission pipelines that are currently piggable, highlighting pipe that was made piggable as a result of projects conducted 2015-2016 YTD.

**TABLE 16-1**  
**SEGMENTS MADE PIGGABLE FROM JANUARY 1, 2015-SEPTEMBER 30, 2016**

<b>Route ID</b>	<b>Approx. Launch Mile Point</b>	<b>Approx. Receiver Mile Point</b>	<b>Piggable Distance<sup>(a)</sup></b>
109	0.01	23.30	24.52
138	43.43	49.43	6.33
1202-16 + 138C	43.38	0.00	11.33
114	28.98	34.07	5.13
119A	9.68	16.46	7.09
0617-03	0.02	0.89	10.71
191 + SP-5	0.00	5.76	5.82
0617-06	11.01	13.01	2.03
215	0.00	20.08	20.34
132A	0.00	1.49	1.50
108	74.93	50.69	25.32
<b>TOTAL</b>			120.12

- (a) Piggable Distance is measured in PG&E's Geographic Information System (GIS) and does not necessarily equal the difference between launch mile point and receiver mile point. This is because GIS is a more accurate means of calculating the length of each piggable sections, compared to mile points which can be skewed over time by the replacement/relocation of pipe sections.

**TABLE 16-2  
PIGGABLE TRANSMISSION PIPELINE SEGMENTS**

<b>Piggable Pipeline Segments</b>			
<b>Route</b>	<b>Launch Mile Point</b>	<b>Receiver Mile Point</b>	<b>Piggable Mileage</b>
302E	0.00	12.02	12.00
57B	0.00	16.68	16.74
2	43.47	118.00	75.23
300A	450.85	502.23	52.08
300A	393.54	450.83	57.31
142S	0.02	8.98	9.00
131	24.89	46.34	21.45
172A	40.08	69.80	29.78
300B	393.78	450.78	57.19
401	317.96	428.05	110.14
300B	450.81	502.62	52.39
153	0.00	17.63	17.86
2	158.00	122.14	36.34
114	9.03	16.58	8.23
21E	64.54	93.54	30.65
SP3	167.32	198.49	33.27
105B	0.02	11.81	11.85
21D	18.65	31.81	13.30
303	0.00	42.83	44.78
400	82.38	142.58	60.23
119B	0.02	10.16	10.41
21C/D/E	35.08	53.11	18.83
401	82.37	149.15	66.93
100	138.46	150.14	12.13
124A	0.00	26.03	26.52
21E	53.12	64.36	11.47
210A	1.39	19.47	18.92
177A	88.83	163.04	74.47
210B	1.40	25.97	25.98
57A	9.49	16.70	7.26
1509-05	0.00	6.48	6.48
21E	93.54	114.89	20.34
108	0.03	37.15	37.07
300B	256.65	298.96	43.21
300A	256.22	299.00	43.39
105N	7.76	22.8538	16.06
300A	354.12	393.50	39.41
300B	354.12	393.73	39.90
111A	20.32	27.58	7.27
210C	19.35	32.09	12.85
132	31.93	38.39	6.80
L-406	0.00	13.83	13.92
300A	299.01	353.82	57.55
300B	299.02	353.82	54.91
101	0.01	11.83	12.31
101	11.85	33.68	22.88
131-30	50.70	57.51	7.01
132	0.00	31.93	32.87
L-57C	0.01	6.40	6.41
L-147	0.03	3.57	4.06
109	0.01	23.30	24.52
L-138	43.43	49.43	6.33
L-1202-16 + L-138C:	43.38	0.00	11.33
L-114	28.98	34.07	5.13
L-119A	9.68	16.46	7.09
L-0617-03 + 06 + 07 + 08	0.02	0.89	10.71
191+ SP-5	0.00	5.76	5.82
L-0617-06	11.01	13.01	2.03
215	0.00	20.08	20.34
L-132A	0.00	1.49	1.50
L-108	74.93	50.69	25.32
<b>Total</b>			<b>1627.58</b>

## 17. Lessons Learned in Phase 1 Work

*Describe any lessons learned from undertaking the Phase 1 work that has led to cost efficiencies and quantify any cost savings.*

### Response

PG&E continues to apply lessons learned and associated process improvements from undertaking Phase 1 work—including those previously reported in PSEP Compliance Reports—and seeks improvements to cost efficiencies and savings that result in unit cost expenditures below forecasted costs. PG&E's lessons learned from the various projects completed in the Strength Test, Pipe Replacement, and ILI programs are discussed below.

PG&E is interpreting this Requirement to be applied to the 2015-2018 GT&S rate case period. Listed below are examples of lessons learned from January 1, 2015 through September 30, 2016:

- 1) Early and Consistent Project Team Engagement:
  - Strong and early engagement by stakeholders (for example project management team, land team, permitting, engineering, etc.) has enabled project teams to: achieve quick results; plan work effectively; establish realistic timelines; identify environmental, engineering, land, and construction needs and provide quick re-designs.
  - Temporary Construction Easements are recognized as critical for safe workspaces. They should be considered early, especially in environmentally sensitive areas. Early participation of land agent in pre-job walks can aid in work scope determination and encroachment needs.
- 2) Permitting:
  - Submit Encroachment permits early and meet with relevant counties in advance to avoid construction delays.
  - Include additional time and resources for State Land Commission and Central California Irrigation District permits.
- 3) Water:
  - Conduct water table surveys and engage the EFS and Water team to develop plans prior to construction.
- 4) Engineering:
  - Hold third-party engineering firms to strict MSA standards.

- Share all A-forms and conduct early constructability reviews to allow for meaningful comments and to QC input.
  - Strong involvement by Engineering allowed moving from Design, to issuing for Construction within a week and completing work on time.
- 5) Traffic Control Plans (TCPs):
- Review all TCPs ahead of time, and verify whether any tree trimming or tree removals are necessary.
- 6) Construction:
- Involving field teams early can aid in planning and constructability reviews.
    - Contractor involvement allowed project to lower costs by utilizing two drilling rigs, and eliminate unnecessary tie-in locations.
    - Suggestion: For complex projects, have both the Alliance contractor and GTGC provide constructability means and methods inputs.
  - Avoid switching construction crews when possible and/or hold on-site meetings during transfers with pictures and write-ups to discuss site conditions and work methods.
  - Allows for construction methodology to be reviewed to find best construction practices.
- 7) Potholing:
- Verify survey data and as-builts early in design with potholing, including at tie-in locations.
  - Engage the Engineer, Construction Manager, and contractor to review drawings to verify potholing locations.
  - Insist on soil samples and depths to verify conditions and adjust construction methods accordingly.
- 8) Instrumentation and Regulation (I&R):
- Consult Local I&R Supervisors early to incorporate: their system knowledge; review clearances; operations; condition of facilities; and understanding of timelines.
  - I&R's early involvement allowed these projects to start on schedule and tie-ins to be completed on time.

9) Government Relations:

- Strong involvement by Government Relations allowed for a better partnership with California Department of Transportation (CalTrans), state and local agencies as well as the public.

10) Work Bundling:

- Engage the Pipe Line Engineers (PLE) early to review work bundling options.
- Consistent Field Engineers and Pipeline Engineering and Design can allow for further efficiencies.
- When multiple projects are bundled together, it is critical to maintain strong communication with all parties (including PLEs, Contractors, the Clearance team, and other project teams) in order to create a comprehensive plan that makes the best use of resources.
- Coordination between project teams can allow for shared resources and significant cost savings.

11) Outside Agencies:

- Inform outside entities of PG&E's design standards to level set scope and procedures.
- When projects span multiple years, communicate construction costs increases and necessary utility agreements.
- Stress potential delays that may occur due to a lack of state-approved bio monitoring resources if a project is delayed.
- Provide constant contact with the jurisdiction and contractor—even when the project is on hold—to set scheduling expectations.
- Secure complete third-party contracts before beginning designs.
- Plan early and set realistic schedule and scope expectations when working with CalTrans.

12) Materials:

- Maintain proper storage of pipe and methods of handling materials.
- Have correct valves in stock, otherwise further re-work and clearance delays may occur.
- Coating issues can be resolved through good communication among the Inspector, Contract Management Distributors, Program Management, and Pipeline Engineer.

**18. Potential Enhancements to Phase 2 Planning and Budgeting**

*How will the work PG&E conducts in Phase 1 influence how PG&E will plan and estimate the costs of its proposed projects for Phase 2?*

**Response**

This requirement is specific to PG&E's PSEP proceeding (D.12-12-030) and is not applicable to the GT&S Rate Case.

## 19. Cost Impacts of Unexpected or Unforeseen Items

*What, if any, significant unexpected or unforeseen items did PG&E encounter in undertaking the projects and what were the resulting cost impacts on a project-by-project basis?*

### Response

Unlike PSEP, PG&E did not forecast specific projects in the GT&S rate case. Rather, it forecast costs for Strength Tests, Pipe Replacement, and ILI on a programmatic-basis, using various forecast methodologies. For purposes of responding to this directive, PG&E used projects for which the original job estimates are greater than \$10 million where it has fully documented risk information and the ability to cross reference the base line information. PG&E has summarized primary cost drivers associated with these projects that have, in these cases, resulted in significantly-higher total actual-project costs, than the budgeted amount. Therefore, the analysis of these projects revealed the most significant unexpected or unforeseen items encountered in the reporting period.

Table 19-1 in the Appendix provides:

- PG&E's most recent project-level analysis for the most impactful of unexpected or unforeseen items that have affected the projects completed in 2015-2016 YTD with over 10 percent cost variance and the resulting cost impacts;<sup>12</sup> and
- An identification of ways in which PG&E is addressing these risks on an ongoing-basis by incorporating the lessons learned into project delivery processes.

Project selection criteria:

- 1) Projects were mobilized between January 1, 2015 and September 30, 2016, and the original Job Estimate was over \$10 million;
- 2) Projects that have cost variances equal to or greater than 10 percent of original Job Estimate; cost variance is derived from total cost since the inception of the order, which may include costs prior to reporting period, to the completion of the project; and
- 3) A detailed explanation of why the overrun occurred.

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<sup>12</sup> Impacts are determined using the information in the Change Orders issued after completion of Job Estimate.



The cost variances of these projects were primarily driven by materialized risks during project execution.

For projects completed in 2015-2016 YTD, PG&E identified that “Scope Change after Issue for Bid (IFB),”<sup>13</sup> “Unsuitable Soil Conditions,”<sup>14</sup> and “High Volume Surface/Groundwater”<sup>15</sup> caused the greatest cost increases. The total impact of these risks represented significant cost variances to the original budgeted amount of the project. These risks are discussed further below.

- Scope Change After IFB:
  - This risk has significant impacts to both cost and schedule of projects in pipe replacement and test. It has several contributing factors, including additional scope and engineering modifications identified after the completion of construction drawings, which were issued for bid; and estimate corrections. The most common resultant changes were additional replacement, excavation, sniff holes, bell holes and/or welding. The changes were generally requested by counties, cities, or other agencies, such as CalTrans or other utilities. Another significant cost driver that changed the work plan after estimating is when a city or county requires project work hours in street locations to begin at 9 a.m. and end by 3 p.m. to avoid creating traffic problems. By the time traffic control is set up or taken down, there may only be four to five productive work hours, potentially doubling the length and cost of a project.
- Unsuitable Soil Conditions
  - Impacts related to this risk affected projects in pipe replacement. Both cost and schedule implications were realized on impacted projects. Unanticipated unstable soils required additional backfill, shoring or other measures; while unanticipated rock could impact productivity of trenching, boring or drilling.

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<sup>13</sup> Addition of project scope including, but not limited to replacement/test length or valve quantities, after approval of the Job Estimate.

<sup>14</sup> Unsuitable soil may require additional shoring or other measures.

<sup>15</sup> Unplanned permitting conditions, requirements and delays from various permitting agencies (e.g., limited working hours, limited access, delays in issuance, etc.) may be experienced resulting in schedule and/or cost impacts.

- High-Volume Surface/Groundwater
  - This risk has several contributing factors, including a higher volume of groundwater encountered during construction and unplanned water management costs (e.g., permit changes, more tanks, trucking, treatment, disposal, TCEs). Impacts related to this risk affected some Pipeline Replacement projects, which resulted in cost and schedule impacts.

**TABLE 19-2**  
**DESCRIPTION OF TABLE 19-1 COLUMN REFERENCE**

Column Name	Description
Line #	Reference number for this report.
Order Number	Financial system of record reference number to track specific costs, e.g., on individual projects and provided in workpapers supporting PG&E Gas Transmission Application for projects commonly resulting from project split or addition.
Project Description	Order Description for strength test, pipe replacement, ILI, and upgrades for ILI.
Region	Region where line is located.
Risk	Categorization of risk factor affecting the project.
Description	Description of risk factor.
Cost Impact (\$)	Impact of risk to project cost.
Comments	Description of how risk factor materialized.

## 20. Program Amount Authorized and Spent

*Provide a table showing the total amount authorized for recovery from ratepayers and the total amount spent by PG&E year-to-date shown by month and broken down activity (e.g., hydrotesting, pipe replacement).*

### Response

Table 20-1 included in the Appendix depicts the total amount of spend by PG&E in 2015 and 2016 YTD by month, as well as the corresponding annual (2015 and 2016) adopted/imputed program amount for the following programs: Strength Test Program (including both the portions in base expense and Transmission Integrity Management Program (TIMP) expense balancing account); TIMP capital balancing account; ILI portion of the TIMP expense balancing account; and the programs associated with pipe replacement.

As mentioned in the Introduction, PG&E changed its method for allocating overhead costs. Starting in 2016, expense spend receives certain overheads, while capital and balancing account spend receive all overheads. Refer to Figure 29-2 for additional information. In response to Requirement 20, in Table 20-1, for base expense spend—which refers to spending outside of the Transmission Integrity Management Program Balancing Account (TIMPBA)—PG&E provides both the current overhead view used for internal reporting purposes, as well as base expense costs as if they had been fully-burdened, to allow for a direct comparison to the capital and balancing account spend and the adopted/imputed program amount shown in Requirement 20.

## 21. Shareholder Costs Absorbed

*Provide a table showing the total amount of costs that shareholders will absorb year-to-date shown by month and broken down activity (e.g., hydrotesting, pipe replacement).*

### Response

Table 21-1 included in the Appendix depicts the total amount of spend by PG&E in 2015 and 2016 YTD by month, annual (2015-2018) adopted/imputed program amount, and shareholder funded costs for the Strength Test program (including both the portions in base expense and TIMP expense balancing account), TIMP capital balancing account, ILI portion of the TIMP expense balancing account; and the pipe replacement programs with shareholder-funded spend.

In response to Requirement 21, in Table 21-1, for base expense spend—which refers to spending outside of the TIMP Balancing Account—PG&E provides both the certain overhead view used for internal reporting purposes, as well as base expense costs as if they had been fully burdened, to allow for a direct comparison to the capital and balancing account spend and the adopted/imputed program amount shown in Requirement 21.

With respect to the dollars funded by shareholders, PG&E expects a significant portion, if not all, of the spending on Strength Test, Pipe Replacement, and ILI programs to be included as safety-related spending for purposes of calculating the \$850 million penalty adopted in the San Bruno penalty decision. Table 21-1 will be adjusted pending the results of the Phase II decision.

## 22. Forecast vs. Actual Mileage – Replacements

*Provide a table showing the total mileage of pipe PG&E forecast to replace in R.11-02-019 and the mileage PG&E has replaced year-to-date. Identify the location, Line #, milepost, Class of the pipe replaced. Indicate whether the pipe is located in a High Consequence Area.*

### Response

For the current reporting period, PG&E has replaced approximately 13.09 miles of gas transmission pipeline. Table 22-1 below provides the total pipeline miles associated with vintage pipe, class location, shallow pipe, and other pipeline safety investment. Table 22-2 included in the Appendix provides total mileage of pipe PG&E has replaced for the reporting period, identifying the location, Line number, milepost, class of the pipe replaced, and whether the pipe is located in a HCA.

**TABLE 22-1**  
**TOTAL PIPELINE MILES REPLACED – ADOPTED AND ACTUAL MILEAGE**  
**JANUARY 1, 2015 – SEPTEMBER 30, 2016**

Pipe Replacement	2015	2016	Total
Vintage Pipe	20.0	20.0	40.0
Class Location	1.97	1.97	3.94
Shallow/Exposed Pipe	2.50	2.50	5.00
Other Pipeline Safety Investment	0.0	0.0	0.0
Total Adopted:	<b>24.47</b>	<b>24.47</b>	<b>48.94</b>
Actual Miles	4.71	8.38	13.09

**TABLE 22-3**  
**TABLE 22-2 COLUMN REFERENCE**

<b>Column Name</b>	<b>Description</b>
Line #	Reference number for this report.
Order Number	Financial system of record reference number to track specific costs, e.g., on individual projects and provided in workpapers supporting PG&E Gas Transmission Application for projects commonly resulting from project split or addition.
Project Description	Order Description for ILI, upgrades for Strength Test, Pipe Replacement, and ILI, for Pipe Replacement and Strength Testing.
MAT	Maintenance Activity Type (MAT) represents a complete, distinct, sub-process of major work category. MATs are designated by three-character alphanumeric codes. The first two digits of the MAT are the MWC. A MAT can only be assigned to one MWC.
Miles Completed	Miles of pipeline replaced.
Line	Pipeline identifier.
MP1	Beginning project mile point.
MP2	Ending project mile point.
City	Location of project.
HCA	Project includes a High Consequence Area.
Class Code	Class of pipeline included in project.
Tie-In Date	For ILI and pipeline testing and replacement projects, the tie-in date is the date the pipe became operational and the project was completed.

### 23. Forecast vs. Actual Mileage – Strength Testing

*Provide a table showing the mileage of pipe PG&E forecast to hydrotest in R.11 02 019 and the mileage PG&E has tested year to date. Identify the location, Line #, milepost, Class of the pipe tested. Indicate whether the pipe is located in a High Consequence Area.*

#### **Response**

As of September 30, 2016, PG&E has completed strength testing on over 140 miles of gas transmission pipeline during the reporting period. Table 23-1 below, provides the total pipeline miles adopted by the CPUC to be strength tested in D.16-06-056 and the total pipeline miles strength tested through the end of this reporting period. Table 23-2 of the Appendix provides detail on completed projects, identifies the location, pipeline number, milepost, and class of the pipe tested, and indicates whether the pipe is located in an HCA on a project-by-project basis.

Table 23-3 provides a reference for the specific data points requested in Requirement 23 to their corresponding columns in Table 23-2 in the Appendix. Additional data points are included for context in navigating the tables.

Due to the timing of the final decision and a focus on completion of shorter HCA and Class 3 and 4, non-HCA pipe sections (“NTSB” pipe), PG&E’s rate of completion is slower than forecast.

**TABLE 23-1**  
**TOTAL STRENGTH TESTING – ADOPTED AND ACTUAL MILEAGE**  
**JANUARY 1, 2015 – SEPTEMBER 30, 2016**

<b>Strength Testing</b>	<b>2015</b>	<b>2016</b>
Adopted Miles	170	170
Actual Miles through September 30, 2016	78.71	61.93

**TABLE 23-3**  
**TABLE 23-2 COLUMN REFERENCE**

Column Name	Description
Line #	Reference number for this report.
Order Number	Financial system of record reference number to track specific costs, e.g., on individual projects and provided in workpapers supporting PG&E Gas Transmission Application for projects commonly resulting from project split or addition.
Project Description	Order Description for strength testing.
MAT	Maintenance Activity Type (MAT) represents a complete, distinct, sub-process of major work category. MATs are designated by three-character alphanumeric codes. The first two digits of the MAT are the MWC. A MAT can only be assigned to one MWC.
Miles	Miles strength tested.
Line	Pipeline identifier.
MP1	Beginning project mile point.
MP2	Ending project mile point.
City	Location of project.
HCA	Project includes a High Consequence Area.
Class Code	Class of pipeline included in project.
Tie-In Date	For pipeline testing, the tie-in date is the date the pipe became operational and the project was completed.



## 24. Public Outreach Costs

*Provide the costs of the public outreach PG&E has incurred year-to-date by month as compared to the amount authorized. Explain in detail what public outreach activities PG&E has engaged in.*

### Response

Public Outreach is included as an integral part of major gas transmission projects. Public outreach costs incurred during 2015-2016 YTD are shown in Table 24-1. Monthly public outreach costs for 2015 and 2016 are shown in Table 24-2.

**TABLE 24-1  
PUBLIC OUTREACH COSTS  
JANUARY 1, 2015 – SEPTEMBER 30, 2016  
(MILLIONS OF DOLLARS)**

2015	2016
\$1.43	\$.57

**TABLE 24-2  
MONTHLY PUBLIC OUTREACH EXPENSE  
JANUARY 1, 2015 – SEPTEMBER 30, 2016  
(MILLIONS OF DOLLARS)**

Year	Jan	Feb	Mar	Apr	May	Jun	July	Aug	Sept	Oct	Nov	Dec
2015	\$.05	\$.08	\$.12	\$.10	\$.10	\$.18	\$.15	\$.14	\$.10	\$.14	\$.14	\$.13
2016	\$.09	\$.12	\$.12	\$.05	\$.04	\$.04	\$.04	\$.04	\$.04	N/A	N/A	N/A

D.16-06-056 adopted funding for public outreach, including governmental outreach, within individual project estimated costs. PG&E's estimated public outreach costs vary by program driven by the nature of the work and were based upon a percentage of project costs before project management and escalation.

Specific monthly adopted amounts cannot be extracted from D.16-06-056. Customers and communities are informed and educated on PG&E's gas safety work, based on customer outreach models that have been designed for the various transmission programs, and are customized to match the appropriate level of outreach with the level of customer impact. Public outreach activities undertaken have included the use of Interactive Voice Response (IVR or automated phone notifications); letters; open houses; signage; door-to-door

canvassing; one-on-one customer phone calls and meetings; and customer group presentations. As of September 30, 2016, 12 open houses were hosted, 325,375 letters were mailed, and 481,821 IVR calls were made to customers impacted by transmission pipeline work during 2015-2016.

Customer Outreach activities are managed on a consistent basis across transmission pipeline programs by a dedicated team of Customer Outreach Specialists within PG&E's Customer Care Local Customer Experience organization. Each project follows a standardized process for customer outreach, which may include, but is not limited to:

- Site walk with project team to identify customer impacts;
- Letter to impacted customers;
- Invitation to an open house hosted by PG&E within the affected project area;
- Work location signage prior to mobilization;
- IVR sent to area customers prior to significant activities (e.g., venting/release of natural gas);
- Additional customer outreach and accommodations as dictated by the nature of the project (e.g., temporary relocation for nitrogen strength test);
- Local customer canvassing to identify and incorporate feedback into ongoing procedures;
- IVR in advance of open house to remind customers of the date, time and location of the open house;
- Canvassing in advance of open house in particularly-impacted areas with copies of the letter/invitation; and
- The Customer Outreach Specialist inserts additional customer touch points where deemed beneficial, depending on the particular situation.

## 25. Service Outage Performance

*Describe (e.g., provide date(s), location, Line #) all planned and unplanned service outages PG&E experienced in conducting the project work and explain how PG&E addressed customer needs during the outages. Were customers notified of any outages beforehand?*

### Response

PG&E has successfully conducted gas transmission pipeline outages, supporting 238 completed construction projects during the reporting period, with minimal impact to customer service.

In 2016 PG&E provided portable gas support to the Redding Area using CNG/LNG to allow pipeline upgrade work to be completed. The size and complexity of this project substantially exceeded the 2015 Santa Cruz area CNG/LNG response as shown below:

**TABLE 25-1  
LARGE SCALE PORTABLE OPERATIONS**

Project Aspect	Redding Phase 1	Santa Cruz August 2015
Customers	~43,000	46,500
Customer-Days	1.04 million	0.92 million
LNG Injection Points	2	1
CNG Injection Points	17	4
Natural Gas (MMcf) from LNG	94	81
LNG (gallons)	1.14 million	0.99 million
LNG Trailers Utilized	40	40
CNG (MMcf)	12.6	2
Mobile CNG Compressor (MMcf)	11.4	
CNG Trailers Utilized	22	10
Miles Driven with Zero Incidents	135,000	83,000
Personnel Engaged	59 PG&E 30 Trucking 28 Other	35 PG&E 18 Trucking 16 Other
Duration (days)	26	21

The Redding Line 402 project took Redding's Electric power plant down for three weeks and required a cement plant to go on alternative fuel for six weeks.

Both customers were satisfactorily informed and compensated by PG&E to find an alternative to minimize the impact of the disruption.

Table 11-1 shows whether CNG/LNG services were provided on a project-by-project basis.

Initial project design and planning activities include identification of potential customer impacts. PG&E specifically works to minimize the impact to customers and schedules work where possible to avoid customer outages by using existing system redundancies (e.g., cross compression, parallel pipes, or back-feeds to maintain customer service). This is a primary reason why many construction activities cannot take place during seasonal winter gas demand periods.

To mitigate potential customer impact, PG&E increased its CNG/LNG Portable Program to enable the increased avoidance of customer outages. Rising from 22 units in 2010 to 212 units in 2016; the program continues to be an integral part of project planning and scheduling activities, and has successfully met the significantly increasing demand for its services. The program supported 7,850 tap days<sup>16</sup> in 2015 and 2016 using portable CNG and LNG equipment. For 2015-2016 YTD, 7,850 tap days have been supported, which equates to supporting almost 13 separate locations on any given day. In terms of customer days supported, PG&E supported over 3.1 million customer days in 2015-2016 YTD.

In cases where customer loads are significant, PG&E has worked with assigned account representatives to schedule activities to minimize impact and potentially avoid the significant costs associated with LNG support operations. This has involved scheduling tests outside of agricultural peak periods and commercial work hours and scheduling project activities to occur outside of school hours or key events.

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<sup>16</sup> Tap days are the number of days per customer where CNG/LNG services are provided.

**26. Forecast Projects Not Completed or Replaced**

*Describe or provide a specific reference to PG&E's work papers of the projects that were not completed or replaced by a higher priority project and show the uncompleted project's associated costs. Compute the corresponding reduction to the Implementation Plan adopted amounts set out in Attachment E, as required by Ordering Paragraph 6.*

**Response**

This requirement is specific to PG&E's PSEP proceeding (D.12-12-030) and not applicable to transmission pipeline programs (Strength Test, Pipe Replacement, and ILI).

## 27. Project Cost Recovery

*Provide a clear explanation, for each project for which expenditures have been incurred, of how the project is necessary to comply with PSEP requirements rather than being included among projects that are already funded in D.11-04-031.*

### **Response**

This Requirement is specific to PG&E's PSEP proceeding (D.12-12-030) and not applicable to transmission pipeline programs (Strength Test, Pipe Replacement, and ILI) outlined in OP 11 of D.16-06-056. In PG&E's PSEP proceeding, PG&E forecast specific projects down to the segment level and the reporting format established in Attachment D of the PSEP decision reflects the project-specific focus. In contrast, PG&E's 2015 GT&S rate case proceeding included forecasts at the program-level; in general, costs were not forecast at the project-level.

**28. Record Improvement Efforts Progress**

*Progress report on record improvement efforts, including report on costs absorbed by shareholders.*

**Response**

This Requirement is specific to PG&E's PSEP proceeding (D.12-12-030), and not applicable to transmission pipeline programs—Strength Test, Pipe Replacement, and ILI—outlined in OP 11 of D.16-06-056.

## 29. Additional Relevant Information

*Any additional relevant information not listed above as specified in hearing Exh. 2 at 8E-1 and 8E-2.*

### **Response**

The information that follows is relevant to the understanding of information provided in this report.

#### Cost Model

Effective January 1, 2016, PG&E made a change to its cost model to provide better visibility to each LOB to costs for which they are directly accountable, and are in the best position to control. PG&E's cost model is the structure by which costs are assigned to certain processes or activities in the Company. PG&E's cost model is used for forecasting, budgeting and tracking costs for internal management purposes as well as for external reporting purposes. Since adopting SAP as the enterprise budgeting and planning system in 1996, PG&E's cost model charged the majority of Shared Services and other support costs (indirect costs) to the organizations that utilized the services. Those organizations—in turn—included these costs in the labor rates that are used to forecast, budget and track expense and capital program expenditures.

The core of the cost model change is related to labor rates. Labor rates are used to charge work to expense and capital jobs. The old cost model used a fully inclusive labor rate which factored in all support and overhead costs, e.g., benefits, payroll taxes, supervision, technical support and office space. The old cost model approach made it easy to evaluate the full costs of field and other work, but it was more difficult to monitor the individual cost components of the work (e.g., direct labor compared to support labor). The new cost model changes the labor rate from a “fully loaded” rate to a direct “labor only” labor rate which no longer includes support and overhead costs (e.g., moves benefits and payroll taxes out of the labor rate, centralizes the costs of facilities, IT devices, and fleet to the organizations that own these services, and eliminates support costs from the labor rate and establishes budgets for these organizations). In the new cost model, support and overhead costs are budgeted by the organizations best able to control the costs. For example, IT devices are centrally budgeted for and managed in the new cost model within IT and are stripped out of the direct labor rate.



Chargebacks (the practice of charging internal costs directly from one organization to another for budgeting and managerial purposes) are eliminated under the new cost model. Originators of costs (e.g., Corporate Real Estate and Transportation Services) are accountable for managing the companywide costs for the services they provide. The elimination of chargebacks creates better cost transparency and greater accountability for costs, allowing for more-effective resource decisions. The change also aligns PG&E's cost model with most other utilities including those located in California.

For capital jobs, the new cost model allocates support and overhead costs to the work proportionate to labor costs as required by the Federal Energy Regulatory Commission Uniform System of Accounts. Accounting for existing balancing account activities are treated similar to capital work. In other words, support and overhead costs are included, to ensure balancing accounts reflect fully allocated costs, and to provide a means to compare recorded amounts to adopted amounts in D.16-06-056. The manner in which these support and overhead costs get allocated to the capital and balancing account orders are through allocation pools using overhead rates based primarily on direct internal labor hours in those orders (not via a direct charge but either through an enterprise or line of business level allocation pool).

The 2016 budget information is shown in PG&E's new cost model. For comparison purposes, PG&E has translated PG&E's 2016 budget to the old cost model for base expense cost categories as this is the cost category that does not receive overheads (non-direct labor costs) under the new cost model. While the new cost model shifts costs among MWCs and organizations to improve accountability and visibility by assigning costs to the service providers where costs can be better monitored (e.g., Shared Services and Information Technology), this shift does not change the overall costs at a Companywide level.

Below is a simple pictorial representation of differences between the prior cost model methodology and the methodology used under the new cost model:

FIGURE 29-1  
CHANGE TO LABOR ONLY RATE

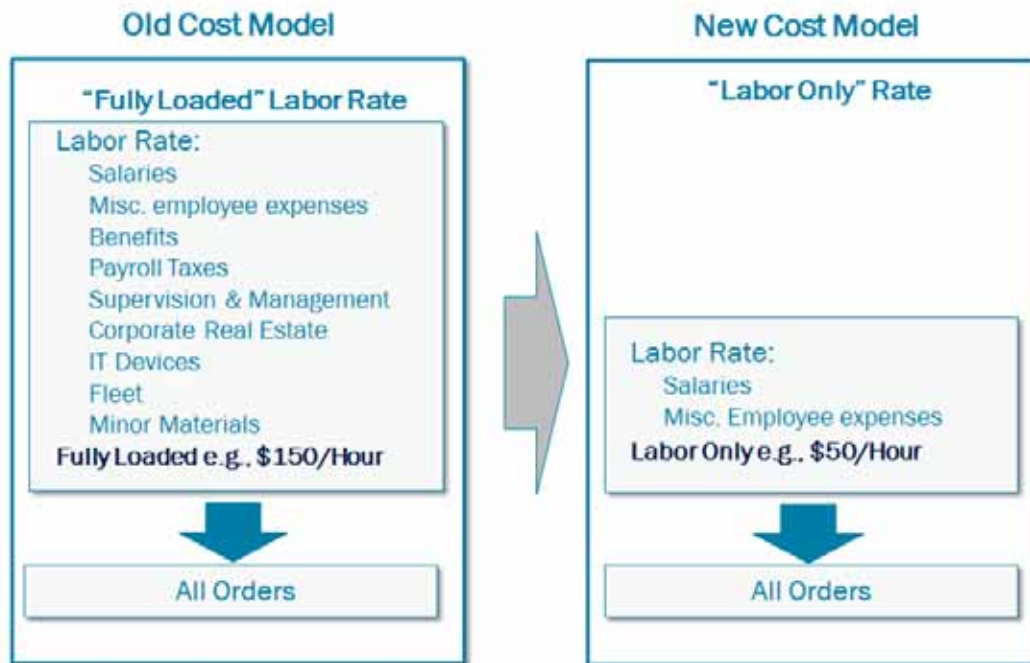
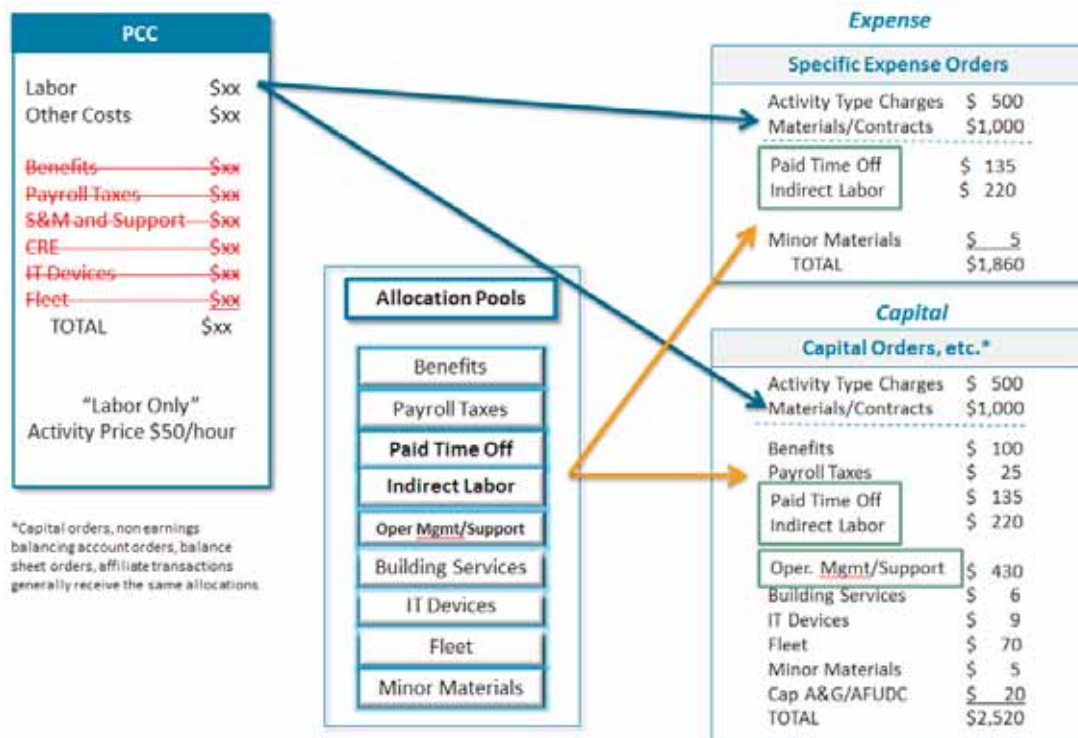


FIGURE 29-2  
NEW COST MODEL – DESIGN OVERVIEW



(a) Example of non-earnings balancing account is a one-way TIMP expense balancing account.

### MWC/MAT Re-design

In an effort to better align costs associated with Gas Operations programs and projects to accounting orders, PG&E is re-designing its MWCs and MAT. Because the existing MAT structure contains multiple programs aligned within a single MAT, it made cost reporting by program difficult. The updated MAT structure will have no more than one program per MAT, which will facilitate cost reporting by program. A result of the MWC/MAT re-design is that some work moved from one MAT code to another MAT code. The updated MAT structure will also provide improved transparency in future GT&S filings. It has been an ongoing process that PG&E projects to be completed by the end of 2016.

The costs reported in this report remain assigned to the original MWCs and MATs as reflected in PG&E's 2015 GT&S rate case forecasts, because the MWC/MAT redesign is not yet complete. PG&E will include further details of the MAT re-design and its impact on cost reporting in the transmission compliance report for data relating to the fourth quarter of 2016.

**PACIFIC GAS AND ELECTRIC COMPANY**  
**APPENDIX**

FIGURE 4-3

**TRANSMISSION QUALITY ASSURANCE  
ATTRIBUTE CHECKLIST AND WEIGHTING LEVELS REV 30**

VERIFICATION					
Attribute		Weighting	Supporting Document		
1	Was proper PPE's utilized for the task performed?	Medium	Code of Safe Practices - Section 1	SAFE-1005S	
2	Was the copy of USA ticket on site?	Medium	TD-4412P-05		
3	Was the USA active while digging?	High	TD-4412P-05		
4	Was the EE OQ'd, or working under the span of control of an OQ'd person providing oversight?	High	TD-4008S	TD-4008S Attch 1	
5	Does the welder possess the weld qualification required for the weld being performed?	High	TD-4160P-31		
6	Is the As-Built Package being maintained?	High	TD-4461S		
7	Was JSSA completed as required?	High	SAFE-1001S	Code of Safe Practices - Section 1	
8	Was the air monitor utilized as required?	High	SAFE-1019S	Excavation Manual Part 3 2.1	SAFE-1019S
9	Was Transmission Gas Clearance Procedure followed?	High	TD-4441S		
10	Was Lockout/Tagout Gas Clearance Procedure followed?	High	TD-4441P-20		
11	Was an "A" form completed as required? (minor clerical errors should be recorded as an "Observation")	High	UO S-4110		
12	Was an "A" form/pipe inspection completed? (minor clerical errors should be recorded as an "Observation")	High	UO S-4110		
13	Was a hot work permit completed as required? (minor clerical errors should be recorded as an "Observation")	Medium	SHC 236	SAFE-1013S	
14	Have deviations been approved by engineer per design change procedure WP-4900 with Form F-4900-1?	Medium	WP-4900	F-4900-01	
15	Was proper handling of pre-1972 wrap followed?	Medium	TD-4711P-01		
INSTRUMENT CALIBRATION					
Attribute		Weighting	Supporting Document		
1	Was the air monitor calibrated within tolerance for the current month?	High	M-04		
2	Was the CGI instrument calibrated within tolerance for the current month?	High	TD-4110P-21		
3	Was the locating instrument calibrated every 30 days not to exceed 45 days?	High	TD-5811P-205		
4	Was Pipe-to-Soil Instrument calibrated per standard?	High	TD-4180P-204	D-SO353	
5	Was Calibration Sticker Attached to unit?	Low	L-01		
6	Was the approved DFT gauge calibrated within the last year?	Info Only	IN DRAFT E-50 PILOT	TD-4007S	L-01
7	Has the approved anchor profile equipment been calibrated within the last year?	Info Only	IN DRAFT E-50 PILOT	TD-4007S	L-01
8	Has the approved Electrical Holiday Detector (jeeping device) been calibrated within the last year?	Info Only	IN DRAFT E-50 PILOT	TD-4007S	L-01
9	Has the approved thermocouple/temperature gauge been calibrated within the last year?	Info Only	IN DRAFT E-50 PILOT	TD-4007S	L-01

FIGURE 4-3  
(CONTINUED)

**TRANSMISSION QUALITY ASSURANCE  
ATTRIBUTE CHECKLIST AND WEIGHTING LEVELS REV 30**

APPLICATOR BURIED SURFACE PREPARATION					
Attribute		Weighting	Supporting Document		
1	Did the applicator verify that dust, dirt, oil, grease or other foreign materials were removed in accordance with SSPC-SP 1?	Medium	<a href="#">Gas Transmission Construction Quality Control Manual</a>	<a href="#">E-35</a>	
2	Was the surface verified that preparation was in accordance with SSPC-SP 2 SP 3, SP 10 or SP 11 as specified in the applicable PG&E standard?	Medium	<a href="#">Gas Transmission Construction Quality Control Manual</a>	<a href="#">E-35</a>	
3	Was the abrasive blast media used verified to conform to PG&E standard?	Medium	<a href="#">Gas Transmission Construction Quality Control Manual</a>	<a href="#">E-35</a>	
4	Was the compressed air cleanliness test performed?	Medium	<a href="#">Gas Transmission Construction Quality Control Manual</a>	Blotter Test per ASTM D4285	
5	Was the surface preparation/anchor profile verified to conform with the applicable PG&E standard prior to applying coating?	Medium	<a href="#">Gas Transmission Construction Quality Control Manual</a>	<a href="#">E-35</a>	<a href="#">TD-E-35B-003</a>
6	Did the applicator verify the surface was properly repaired prior to re-coating per PG&E standard?	Medium	<a href="#">Gas Transmission Construction Quality Control Manual</a>	<a href="#">E-35</a>	
7	Did the applicator properly prepare the surface prior to application of coating products per PG&E standard?	Medium	<a href="#">Gas Transmission Construction Quality Control Manual</a>	<a href="#">E-35</a>	
8	Was the previously coated material (repair and/or recoating) removed to 1" – 2" of the surrounded acceptable coating?	Medium	<a href="#">Gas Transmission Construction Quality Control Manual</a>	<a href="#">E-35</a>	
APPLICATOR BURIED COATING					
Attribute		Weighting	Supporting Document		
1	Did the applicator verify that ambient conditions conform to PG&E applicable coating standards prior to applying the coating?	Medium	<a href="#">E-35</a>		
2	Did the applicator use the coating product prior to expiration date?	High	<a href="#">E-35</a>		
3	Did the applicator apply the coating product in accordance with the applicable PG&E standard?	Medium	<a href="#">E-35</a>	<a href="#">TD-E-35B-003</a>	
4	Did the applicator verify that the average DFT readings conform to the applicable PG&E standard?	Medium	<a href="#">E-35</a>	<a href="#">TD-E-35B-003</a>	
5	Did the applicator apply the product within the product re-coating window?	Medium	<a href="#">E-35</a>		
6	Did the applicator properly keep at or above the minimum required voltage for the coating being applied, per NACE SP0188 and PG&E standards?	Medium	<a href="#">TD-E-35B-003</a>	Not to exceed 4000 Volts per TD-E-35B-003	
7	Did the applicator perform a visual inspection of the coating?	Medium	<a href="#">E-35</a>		
8	Did the applicator repair all holidays and/or defects properly per the applicable PG&E standard?	Medium	<a href="#">E-35</a>		

FIGURE 4-3  
(CONTINUED)

**TRANSMISSION QUALITY ASSURANCE  
ATTRIBUTE CHECKLIST AND WEIGHTING LEVELS REV 30**

**APPLICATOR EXPOSED SURFACE PREPARATION**

Attribute		Weighting	Supporting Document		
1	Did the applicator verify that dust, dirt, oil, grease or other foreign materials were removed in accordance with SSPC-SP 1?	Medium	<u>E-30</u>		
2	Was the surface preparation verified to be in accordance with SSPC-SP 2 SP 3, SP 6, SP 10 or SP 11 as specified in the applicable PG&E standard?	Medium	<u>E-30</u>		
3	Was the abrasive blast media used verified to conform to PG&E standard?	Medium	<u>E-35</u>		
4	Was the compressed air cleanliness test performed?	Medium	<u>Gas Transmission Construction Quality Control Manual</u>	Blotter Test per ASTM D4285	
5	Did the applicator properly prepare the surface prior to application of coating products per PG&E standard?	Medium	<u>E-30</u>	<u>TD-E-35B-003</u>	
6	Was the previously coated material (repair and/or recoating) removed to 1" – 2" of the surrounded acceptable coating?	Medium	<u>E-30</u>		

**APPLICATOR EXPOSED COATING**

Attribute		Weighting	Supporting Document		
1	Did the applicator verify that ambient conditions conform to PG&E applicable coating standards prior to applying the coating?	Medium	<u>E-30</u>		
2	Did the applicator use the coating product prior to expiration date?	High	<u>E-30</u>		
3	Did the applicator apply the coating product in accordance with the applicable PG&E standard?	Medium	<u>E-30</u>	<u>TD-E-30B-001</u>	
4	Did the applicator verify that the average DFT readings conform to the applicable PG&E standard?	Medium	<u>E-30</u>		
5	Did the applicator apply the product within the product re-coating window?	Medium	<u>E-30</u>		
6	Did the applicator properly jeep at or above the minimum required voltage for the coating being applied, per NACE SP0188 and PG&E standards?	Medium	<u>E-30</u>	Not to exceed 4000 Volts per TD-E-35B-003	
7	Did the applicator perform a visual inspection of the coating?	Medium	<u>E-30</u>		
8	Did the Air to Soil transition zone extend 6" above ground and 18" into the soil?	Medium	<u>E-30</u>		

FIGURE 4-3  
(CONTINUED)

**TRANSMISSION QUALITY ASSURANCE  
ATTRIBUTE CHECKLIST AND WEIGHTING LEVELS REV 30**

INSPECTOR COATING VERIFICATION					
Attribute		Weighting	Supporting Document		
1	Was a Coating Report filled out when required? (minor clerical errors should be recorded as an "Observation")	High	<u>Gas Transmission Construction Quality Control Manual</u>		
2	Was the Coating Report complete with all the required information? (minor errors should be an "Observation")	Medium	<u>Gas Transmission Construction Quality Control Manual</u>		
3	For All Construction, does the coating inspector have, as a minimum, a current certification of NACE CIP Level 1?	High	<u>Gas Transmission Construction Quality Control Manual</u>		
4	Did the inspector adjust the micrometer zero point before each use?	Info Only	IN DRAFT E-50 PILOT		
5	Did the inspector zero the Electrical Surface profile gauge on a clean glass tile at the beginning of work shift?	Info Only	IN DRAFT E-50 PILOT		
6	Did the inspector, at a minimum, verify the DFT gauge at the beginning of the shift and half way through work shift?	Info Only	IN DRAFT E-50 PILOT	SSPC-PA2	
7	Did the inspector verify the Electrical Holiday detector (Jeeping) was calibrated at the beginning of every shift and re-verify at least twice per day with a high voltage volt meter?	Info Only	IN DRAFT E-50 PILOT	NACE SP0188	
INSPECTOR BURIED SURFACE PREPARATION					
Attribute		Weighting	Supporting Document		
1	Did the inspector verify that dust, dirt, oil, grease or other foreign materials were removed in accordance with SSPC-SP 1?	Medium	<u>E-35</u>		
2	Did the inspector verify that the surface was prepared according with SSPC-SP 2 SP 3, SP 10 or SP 11 as specified in the applicable PG&E standard?	Medium	<u>E-35</u>		
3	Did the inspector verify that the abrasive blast media conforms to PG&E standard?	Medium	<u>E-35</u>		
4	Did the inspector observe or perform the compressed air cleanliness test?	Low	<u>Gas Transmission Construction Quality Control Manual</u>	Blotter Test per ASTM D4285	
5	Did the inspector perform anchor profile readings at the appropriate positions based on the size of pipe per ASTM D4417?	Medium	<u>Gas Transmission Construction Quality Control Manual</u>	<u>TD-E-35B-003</u>	
6	Did the inspector verify that the average anchor profile readings conform to the applicable PG&E standard?	Medium	<u>TD-E-35B-003</u>		
7	Did the inspector verify the surface was properly repaired prior to re-coating per PG&E standard?	Medium	<u>E-35</u>		
8	Did the inspector verify the surface was properly prepared prior to application of coating products per PG&E standard?	Medium	<u>E-35</u>		
9	Did the inspector verify the previously coated material (repair and/or recoating) was removed to 1" – 2" of the surrounded acceptable coating?	Medium	<u>E-35</u>		



FIGURE 4-3  
(CONTINUED)

**TRANSMISSION QUALITY ASSURANCE  
ATTRIBUTE CHECKLIST AND WEIGHTING LEVELS REV 30**

INSPECTOR BURIED COATING					
Attribute		Weighting	Supporting Document		
1	Were ambient conditions monitored for the period coatings were applied?	Medium	Gas Transmission Construction Quality Control Manual		
2	Did the inspector verify that ambient conditions conform to PG&E applicable coating standards?	Medium	E-35		
3	Did the inspector verify that the coating product was applied prior to expiration date?	High	E-35		
4	Did the inspector verify that the application of the coating product applied was in accordance with the applicable PG&E standard?	Medium	E-35		
5	Did the inspector perform dry film thickness (DFT) readings at the appropriate position based on the size of pipe using SSPC PA-2? An average of 3 readings needs to be taken at each position.	Medium	E-35		
6	Did the inspector verify that the average DFT readings conform to the applicable PG&E standard?	Medium	E-35	TD-E-35B-003	
7	Did the inspector verify the product applied was within the product re-coating window?	Medium	E-35		
8	Did the inspector verify that the pipe was properly jeeped at or above the minimum required voltage for the coating being applied, per NACE SP0188 and PG&E standards?	Medium	TD-E-35B-003	Not to exceed 4000 Volts per TD-E-35B-003	
9	Did the inspector perform a visual inspection of the coating and document any defects.	Medium	Gas Transmission Construction Quality Control Manual		
10	Did the inspector verify all holidays and/or defects were properly repaired per the applicable PG&E standard?	Medium	E-35		
INSPECTOR EXPOSED SURFACE PREPARATION					
Attribute		Weighting	Supporting Document		
1	Did the inspector verify that dust, dirt, oil, grease or other foreign materials were removed in accordance with SSPC-SP 1?	Medium	E-30		
2	Did the inspector verify that the surface was prepared according with SSPC-SP 2 SP 3, SP 6, SP 10 or SP 11 as specified in the applicable PG&E standard?	Medium	E-35		
3	Did the inspector verify that the abrasive blast media conforms to PG&E standard?	Medium	E-35		
4	Did the inspector observe or perform the compressed air cleanliness test?	Low	E-35	Blotter Test per ASTM D4285	
5	Did the inspector verify the surface was properly prepared prior to application of coating products per PG&E standard?	Medium	E-30		
6	Did the inspector verify the previously coated material (repair and/or recoating) was removed to 1" – 2" of the surrounded acceptable coating?	Medium	E-30		

FIGURE 4-3  
(CONTINUED)

**TRANSMISSION QUALITY ASSURANCE  
ATTRIBUTE CHECKLIST AND WEIGHTING LEVELS REV 30**

INSPECTOR EXPOSED COATING					
Attribute		Weighting	Supporting Document		
1	Were ambient conditions monitored for the period coatings were applied?	Medium	<u>Gas Transmission Construction Quality Control Manual</u>		
2	Did the inspector verify that ambient conditions conform to PG&E applicable coating standards?	Medium	<u>E-30</u>		
3	Did the inspector verify that the coating product was applied prior to expiration date?	High	<u>E-30</u>		
4	Did the inspector verify that the application of the coating product applied was in accordance with the applicable PG&E standard?	Medium	<u>E-30</u>	<u>TD-E-30B-001</u>	
5	Did the inspector verify that the average DFT readings conform to the applicable PG&E standard?	Medium	<u>E-30</u>		
6	Did the inspector verify the product applied was within the product re-coating window?	Medium	<u>E-30</u>		
7	Did the inspector verify that the pipe was properly jeepped at or above the minimum required voltage for the coating being applied, per NACE SP0188 and PG&E standards?	Medium	<u>E-30</u>	<u>Not to exceed 4000 Volts per TD-E-35B-003</u>	
8	Did the inspector perform a visual inspection of the coating and document any defects?	Medium	<u>Gas Transmission Construction Quality Control Manual</u>		
9	Did the Air to Soil transition zone extend 6" above ground and 18" into the soil?	Medium	<u>E-30</u>		
WELDING VERIFICATION					
Attribute		Weighting	Supporting Document		
1	Are all WPS's for welds performed available on site?	High	<u>TD-4160P-61</u>		
2	Was the NDE test performed when required?	High	Not required in specifications		
3	Was a visual inspection performed when required?	High			
4	Was the NDE examination report (reader sheets) completed when required? (minor clerical errors should be recorded as an "Observation")	High	<u>TD-4160P-61</u>	<u>TD-4190P-501</u>	
5	Was the Daily Field Weld Summary Report completed as required? (minor clerical errors should be recorded as an "Observation")	High	<u>TD-4160P-60</u>	<u>TD-4160P-60-JA01</u>	
6	Does the DFWSR and NDE reader sheet correlate? (Only Count the completed NDE reader sheets)	High			
7	For New Construction, is the inspector, a Certified Welding Inspector (CWI), a qualified welding inspector through an outside qualification program reviewed and accepted by Company Engineering, OR have successfully completed Company's Operator Qualification, Task 10-02.	High	<u>TD-4160P-60</u>		

FIGURE 4-3  
(CONTINUED)

**TRANSMISSION QUALITY ASSURANCE  
ATTRIBUTE CHECKLIST AND WEIGHTING LEVELS REV 30**

WELDING					
Attribute		Weighting	Supporting Document		
1	Does the material conform to the WPS?	High	<u>TD-4160P-61</u>		
2	Did the welder follow all parameters listed on the WPS?	High	<u>TD-4160P-20</u>		
3	Were lineup clamps used as required?	Medium	<u>TD-4160P-20</u>		
4	Were filler metals handled and stored as required?	Medium	<u>TD-4160P-21</u>		
5	Was post-heat performed if required?	High	<u>TD-4160P-20</u>	<u>TD-4160B-004</u>	
6	Was back welding procedure completed as required?	High	<u>TD-4160P-20</u>		
7	Did weather conditions and precautions conform as required?	Medium	<u>TD-4160P-20</u>		
8	Did the minimum spacing of 3" between welds conform as required?	Medium	<u>TD-4160P-20</u>		
9	Does the internal socket weld gap meet the 1/16" requirement?	Medium	<u>TD-4160P-20</u>		
10	Did miter joint conform as required?	Medium	<u>TD-4160P-20</u>		
11	Was pipeline magnetism standard utilized when demagnetizing pipe as required?	Medium	<u>TD-4160P-71</u>		
12	Was NDE inspection performed prior to grinding on welds on pressurized pipeline components and welds $\geq 2$ inch dia AND operating above 60 PSIG?	High	<u>TD-4160B-003</u>		
13	Were air movers used as required?	High	<u>A-38.1</u>		
14	Were air monitor sniff holes used prior to welding as required?	High	<u>A-38.1</u>		

FIGURE 4-3  
(CONTINUED)

**TRANSMISSION QUALITY ASSURANCE  
ATTRIBUTE CHECKLIST AND WEIGHTING LEVELS REV 30**

WELDING INSPECTION					
Attribute		Weighting	Supporting Document		
1	Did the inspector verify that the weld procedure used correlates with the one specified in the job design?	High	<u>TD-4160P-61</u>		
2	Did the inspector verify that all welding electrodes are properly handled as required?	Medium	<u>TD-4160P-21</u>	<u>TD-4160P-61</u>	
3	Did the inspector verify that the Welding operation is protected from weather conditions (rain, snow, ice, or wind) that would impair weld quality?	Medium	<u>TD-4160P-61</u>		
4	Did the inspector verify that welding surfaces, joint design, essential variables were prepared per WPS?	Medium	<u>TD-4160P-61</u>		
5	Did the inspector verify the type of electrodes, wire and shielding gas composition per WPS?	Medium	<u>TD-4160P-61</u>		
6	Did the inspector verify the welder stayed below the maximum interpass temperature per WPS?	Medium	<u>TD-4160P-61</u>		
7	Did the inspector verify the proper use of electrical characteristics (i.e., Direct Current Electrode Positive (DCEP), Direct Current Electrode Negative (DCEN) per WPS?	High	<u>TD-4160P-61</u>		
8	Did the inspector verify the arc voltage and amperage range adherence per WPS?	Medium	<u>TD-4160P-61</u>		
9	Did the inspector visually inspect the external weld surface appearance, external undercut (EU), and weld dimensions (WD) as required?	Medium	<u>TD-4160P-61</u>		
10	For weld defects that require repair, did the inspector verify the use of permissible repair methods and re-examine the weld as required?	Medium	<u>TD-4160P-20</u>		
11	Pre-heat temperature was performed per WPS requirements?	Medium	<u>TD-4160P-20</u>		
12	Pre-heat was checked using temple stick OR touch pyrometer?	Medium	<u>TD-4160P-20</u>		
13	Pre-heat was confirmed at least 3-inches on either side of weld centerline?	Medium	<u>TD-4160P-20</u>		
14	Does the welding inspector have the necessary tools to perform inspection of the essential variables per applicable standard?	Medium	<u>TD-4160P-60</u>	<u>TD-4160P-61</u>	
15	Did the welding inspector perform at least one pre-assembly or in-process inspection during welding process?	High	<u>TD-4160P-60</u>		

FIGURE 4-3  
(CONTINUED)

**TRANSMISSION QUALITY ASSURANCE  
ATTRIBUTE CHECKLIST AND WEIGHTING LEVELS REV 30**

EXCAVATION / BACKFILL					
Attribute		Weighting	Supporting Document		
1	Was form TD-4621S-F01 completed for the excavation as required?	Medium	<u>TD-4621S</u>	<u>TD-4621S-F01</u>	
2	Was form 4.2.2 (Pre-Dig Verification Form) of the Gas Transmission Construction Quality Control Manual completed prior to excavation? (minor clerical errors should be recorded as an "Observation")	Medium	<u>Gas Transmission Construction Quality Control Manual</u>		
3	Is there adequate clearance between underground facilities at all known locations?	High	<u>A-04</u>	<u>TD-4412P-05</u>	
4	Does the pipe zone backfill material conform to the construction drawings and material submittal?	Medium	Per IFC construction drawings.		
5	Did backfill compaction conform to the project documentation and/or permits?	Medium	Per IFC construction drawings.		
6	Was jeeeping and visual inspection performed on coating prior to backfill?	Medium	<u>E-35</u>		
7	Did facility have proper depth of cover?	High	<u>A-04</u>		
8	Were proper safe excavation practices used?	High	<u>TD-4412P-05</u>	<u>TD-4621M</u>	
9	Was shoring/benching utilized when required?	High	<u>TD-4621M</u>		
10	Was proper air or water pressure verified on prospecting Vac equipment?	High	<u>TD-4412-05 PG 2 att 1</u>		

REV 30, 5-20-2016

**FIGURE 6-1**  
**PROJECT GOVERNANCE AND CONTROLS ORGANIZATIONAL CHART**

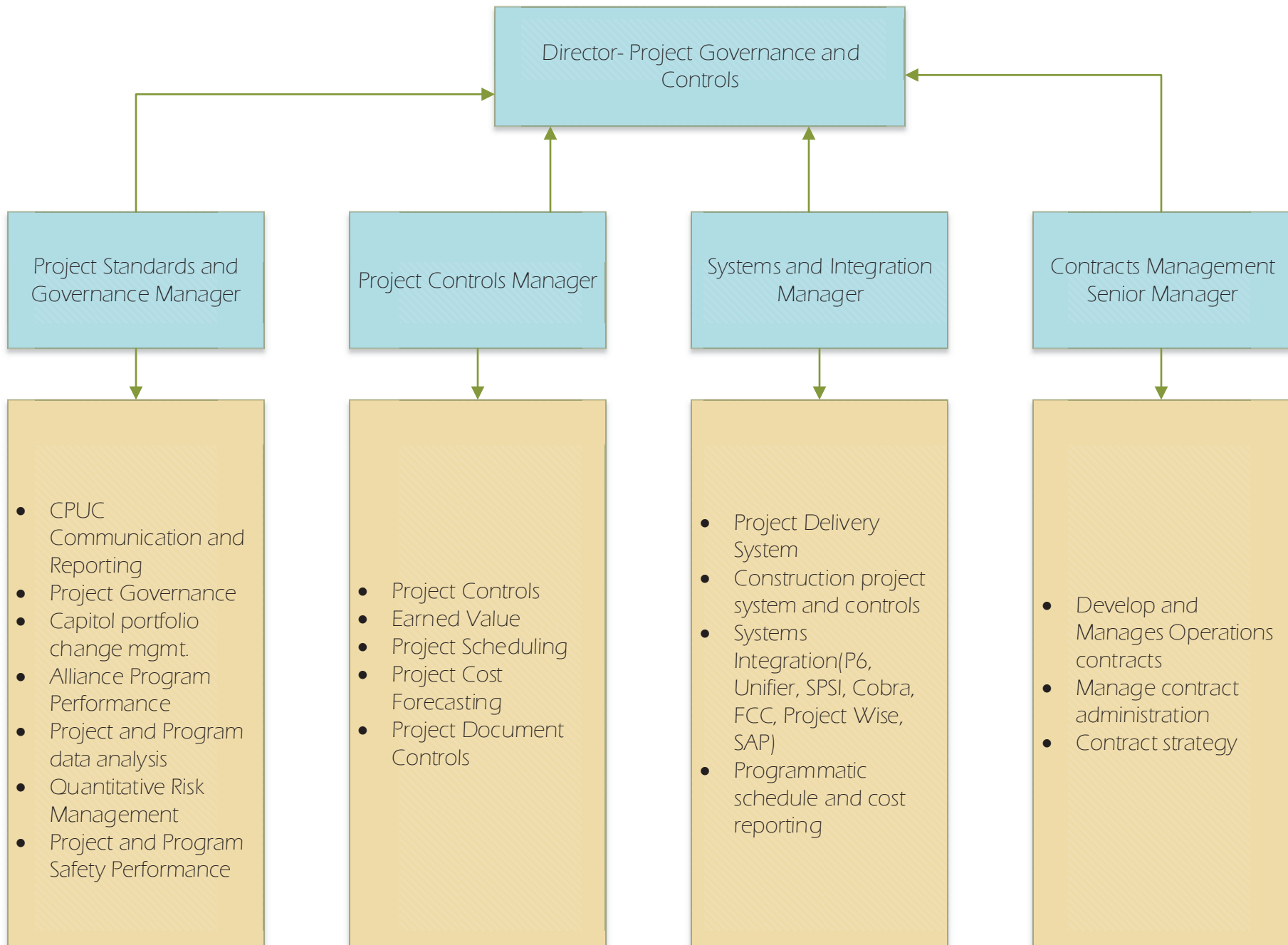


TABLE 11-1<sup>(a)</sup>  
TRANSMISSION PIPELINE PROJECT SUMMARIES

Line No	Construction Phase	Order Number	Program Description	SAP M/W	SAP MA <sup>(b)</sup>	Project Description	Project Name	City	Construction Contractor	Mobilization Date	CNG/LNG	Tie-in Date/ERO	Job Estimate Amount	Total Cost	Total Actuals Full Year	Total Actual YTD	Grand Total (2015 + 2016)	Labor Cost	Materials Cost	Contracts Cost	Other Cost	Variance to Budget (E-Total Cost Inception to Date for Completed Projects)	Total Costs Inception to Date for Completed Projects
1	Completed	3088836	Vintage Pipe Replacement	75	75E	Pipe Replacement	R-309A L-107 1.15MI MP 31.22-32.37 Replace BALP	Fremont	GT/GC	5/18/2015	NO	5/6/2016	41,300,000	28,677,667	17,368,259	46,045,926	8,653,546	2,732,505	22,293,628	11,366,247	(6,094,025)	47,394,025	
2	Completed	30885310	Vintage Pipe Replacement	75	75E	Pipe Replacement	R-292 L-132 MP 41.83-42.95 Replace South San Francisco	South San Francisco	ARB	1/6/2015	CNG	4/28/2015	29,600,000	1,833,832	60,106	1,893,939	280,710	65,713	6,376,258	12,178,474	17,421,526		17,421,526
3	Completed	30604310	Vintage Pipe Replacement	75	75E	Pipe Replacement	R-009 L-108 3.05MI MP 40.27-43.46 Replace	Stockton	GT/GC	9/3/2015	CNG	11/20/2015	25,600,001	16,555,933	(567,749)	15,988,184	2,538,846	2,163,832	8,587,839	2,697,667	7,866,276		17,733,275
4	Completed	31101064	Vintage Pipe Replacement	75	75E	Pipe Replacement	R-503 L-050A, L-1.82MI MP 16.81-18.41 Replace 8" Pipe	Gridley	Barnard	1/5/2016	CNG	6/28/2016	24,300,000	1,164,008	31,753,125	32,737,133	2,540,068	829,578	19,379,919	9,988,168	(8,437,133)		32,737,133
5	Completed	30948132	Pipe Replacement Class Locn	75	75H	Pipe Replacement	R-496 L-403 MP 323.26-325.42 Replace 36" Pipe	Tracy	ARB	10/7/2015	CNG	2/12/2016	13,355,107	9,728,007	2,282,924	12,010,931	1,194,487	3,567,556	7,134,076	114,812	1,519,652		12,015,455
6	Completed	30888833	Vintage Pipe Replacement	75	75E	Pipe Replacement	R-304 Rebuild Foley Ranch Crossover BALP	San Joaquin	ARB	7/30/2014	NO	4/9/2015	10,906,456	3,028,506	(500)	3,028,006	1,210,008	155,220	2,251,215	(588,437)	(2,624,276)		13,530,732
7	Completed	31101067	Vintage Pipe Replacement	75	75E	Pipe Replacement	R-502 L-050A, L-0.87MI MP 11.03-11.9 Replace 8" Pipe	Live Oak	Barnard	1/5/2016	NO	4/16/2016	9,795,546	881,083	8,511,436	9,392,519	1,382,277	371,341	6,737,877	1,365,025	403,027		9,392,519
8	Completed	30712773	Vintage Pipe Replacement	75	75E	Pipe Replacement	R-008 L-108 1.92MI MP 38.17-40.27 Replace	Lodi	Snelson	10/16/2015	CNG	11/20/2015	7,681,625	5,220,466	(141,934)	5,078,532	709,452	801,671	2,640,896	1,106,512	1,599,386		6,082,230
9	Completed	31099955	Pipe Replacement Class Locn	75	75H	Pipe Replacement	R-495 L-300B 0.66MI MP 280.39-281.6 Replace 3.465ft of 34" Pipe	Bakersfield	Snelson	11/2/2015	CNG	2/12/2016	7,228,648	4,333,683	1,243,126	5,576,809	721,946	985,402	3,547,390	32,070	1,651,172		5,577,476
10	Completed	31044010	Shallow Pipe	75	75M	Pipe Replacement	R-498 L-103 1.23MI MP 17.99-19.26 Replace 12" Pipe	Salinas	GT/GC	4/26/2016	CNG	8/25/2016	6,521,344	355,478	4,216,062	4,571,540	1,200,780	371,949	938,888	2,059,923	1,886,086		4,635,258
11	Completed	30931793	Vintage Pipe Replacement	75	75E	Pipe Replacement	R-332 L-132 MP 43.63 Install MLV Hillside & Holly	South San Francisco	ARB	1/6/2015	CNG	4/28/2015	5,048,730	3,673,664	72,439	3,745,914	918,015	130,406	2,528,796	168,698	(988,688)		6,037,418
12	Completed	31004778	Vintage Pipe Replacement	75	75E	Pipe Replacement	R-399 L-191 L Lowering Main Site	Martinez	ARB	6/15/2015	CNG	7/27/2015	4,493,588	1,735,569	64,039	1,799,608	654,432	83,251	912,850	149,076	1,284,273		3,209,315
13	Completed	31020334	Shallow Pipe	75	75M	Pipe Replacement	R-500 L-134A MP 32.6 Install 600ft of 4" Pipe by HDD	Firebaugh	Snelson	10/5/2015	NO	10/26/2015	1,814,430	1,164,091	35,686	1,200,377	367,420	28,712	719,529	84,716	582,506		1,231,924
14	Completed	3162749	Vintage Pipe Replacement	75	75E	Pipe Replacement	R-634 DFM-1305-01 MP 8.58 Replace 500ft	San Jose	Barnard	10/19/2015	NO	11/2/2015	1,519,775	1,177,561	(130,712)	1,046,850	221,994	13,448	752,995	58,413	472,925		1,046,850
15	Completed	3122686	Pipe Rplcmnt - Oth PL Sfty Inv	75	75O	Pipe Replacement	RT-766 L-131 MP 55.25 Remove Leaking Tap Valve Grade 2+	Solomita	GT/GC	4/4/2016	NO	4/14/2016	1,451,477	0	1,280,824	1,280,824	326,888	47,181	728,289	628,466	170,653		1,280,824
16	Completed	3160896	Vintage Pipe Replacement	75	75E	Pipe Replacement	R-224 L-150 Deactivative Main	Davis	Barnard	9/7/2015	NO	10/27/2015	1,288,526	529,651	280,931	810,582	185,309	6,918	349,604	268,661	477,944		810,582
17	Completed	31185453	Vintage Pipe Replacement	75	75E	Pipe Replacement	R-660 L-07 MP 13.08-AP MP 26.01 Deactivation	Livermore	TBD	10/17/2015	NO	10/17/2015	1,284,817	602,689	1,615	604,305	196,610	3,330	378,999	24,266	680,612		604,305
18	Completed	31169464	Pipe Rplcmnt - Oth PL Sfty Inv	75	75E	Pipe Replacement	RT-633 DFM-0821-02 MP 8.15 Cut Out (CO-22A)	San Jose	Underground	2/16/2016	NO	3/14/2016	1,123,500	71,606	1,113,842	1,385,447	184,118	41,119	976,147	184,063	(26,947)		1,385,447
19	Completed	30976114	Vintage Pipe Replacement	75	75E	Pipe Replacement	V-409 L-174 MP 32.03 Remove V-C Replace V-D (Replacement Work)	Arbuticle	GT/GC	11/9/2015	NO	12/4/2015	736,053	708,523	33,450	741,973	524,050	22,123	79,367	116,433	(90,576)		826,629
20	Completed	31139473	Pipe Rplcmnt - Oth PL Sfty Inv	75	75O	Pipe Replacement	R-571 L-302-218 MP 0-0.23 Retire Pipeline (RT)	Meridian	GT/GC	6/24/2015	NO	7/17/2015	505,010	315,769	13,283	329,052	244,763	6,955	41,514	35,820	175,598		329,052
21	Completed	31200000	Pipe Rplcmnt - Oth PL Sfty Inv	75	75O	Pipe Replacement	RT-693 L-137A Grade 2+ Leak Repair	Eureka	GT/GC	1/4/2016	NO	11/1/2016	474,906	58,601	379,192	437,793	129,154	10,060	92,311	206,269	37,113		437,793
22	Completed	31179583	Vintage Pipe Replacement	75	75E	Pipe Replacement	R-588 DFM-1816-05 MP 4.0 Validate 3" Can (RT)	Aptos Hills	Underground	8/15/2016	NO	8/23/2016	77,799	365,872	443,671	112,707	13,286	232,694	84,984	(443,671)		443,671	
23	Completed	31256153	Pipe Rplcmnt - Oth PL Sfty Inv	75	75E	Pipe Replacement	RT-847 STUB10562 MP 0 Removal and Abandoned 8" Line Removal	Pleasanton	GT/GC	7/18/2016	NO	7/20/2016	0	160,072	0	160,072	45,496	2,899	5,497	106,181		160,072	
24	Completed	31100686	Vintage Pipe Replacement	75	75E	Pipe Replacement	L-142 L-220 MP 19.55-19.59 Vintage Pipe Non-Traditional IU	Davis	Barnard	9/21/2015	NO	11/4/2015	154,961	89,197	244,159	113,782	0	71,582	58,794		244,159		
25	Completed	31143751	Shallow Pipe	75	75M	Pipe Replacement	R-576 L-191 L Lowering Main Site 1	Martinez	ARB	9/3/2015	CNG	9/18/2015	1,085,867	727,785	32,588	760,373	351,571	23,317	313,180	72,306	325,494		760,373
26	Completed	31148998	Pipe Rplcmnt - Oth PL Sfty Inv	75	75O	Pipe Replacement	R-599A L-1188 MP 0.26 Emergency Pipe Repair	Fresno	Barnard	8/17/2015	NO	9/3/2015	1,234,750	856,338	(1,231,256)	3,494	270,862	25,025	821,892	(1,114,285)		3,494	
27	Completed	31175104	Shallow Pipe	75	75M	Pipe Replacement	R-650 L-191 L-0136MI MP 32.05 Replace Lowering Main Site 8	Martinez	ARB	7/11/2016	CNG	7/26/2016	36,726	856,338	893,064	169,506	37,763	485,823	199,971		893,064		
28	Completed	31216290	Vintage Pipe Replacement	75	75E	Pipe Replacement	R-508 L-131 0.25MI MP 35.95-35.30 Betterment Replace	Livermore	Underground	6/13/2016	NO	9/13/2016	10,484,665	31,335	0	31,335	790	12,619		10,453,330		31,335	
29	Completed	31086474	IU Upgrades	98	98C	In-Line Inspection	L-047A DFM-0617-06 MP 11.01 Bridge St. Launcher	North Highlands	Barnard	8/31/2015	NO	7/12/2015	8,119,766	1,235,973	9,355,738	1,707,066	76,532	6,008,744	873,406	(645,068)		9,355,738	
30	Completed	74000911	IU Upgrades	98	98C	In-Line Inspection	L-044E L-402 MP 9.54-33.52 IU Upgrade	Cottonwood	Barnard	2/29/2016	LNG/Blackout	7/29/2016	6,366,029	21,127	7,556,160	7,577,288	1,276,072	435,384	3,732,005	2,133,826	(1,211,258)		7,577,288
31	Completed	31086128	IU Upgrades	98	98C	In-Line Inspection	L-056C L-215 MLV 8.40-MLV 17.10 IU Upgrade	Turlock	GT/GC	4/25/2016	CNG	5/13/2016	5,115,444	4,111,831	1,418,043	5,529,873	2,316,365	527,678	1,339,079	1,346,752	(426,377)		5,541,781
32	Completed	31086338	IU Upgrades	98	98C	In-Line Inspection	L-048B L-132A Rengstorff Station IU Upgrade Receiver	Mountain View	Underground	10/19/2015	NO	1/5/2016	5,080,458	2,743,280	691,135	4,434,415	801,250	316,649	7,134,377	602,139	257,638		4,822,820
33	Completed	31087565	IU Upgrades	98	98C	In-Line Inspection	L-047F DFM-0617-06 MP 5.22, DFM-0617-08 MP 0.00 IU Upgrade	Fair Oaks	Barnard	8/31/2015	CNG	11/19/2015	4,985,712	4,578,532	189,881	4,768,413	808,761	129,319	1,630,255	185,178	166,723		4,818,889
34	Completed	74000861	IU Upgrades	98	98C	In-Line Inspection	L-044A L-402 MP 0.02 IU Upgrade	North Highlands	Barnard	3/7/2016	LNG/Blackout	6/22/2016	4,583,224	303,236	2,548,452	2,851,688	503,503	186,916	1,630,287	530,982	1,731,536		2,851,688
35	Completed	31086521	IU Upgrades	98	98C	In-Line Inspection	L-046B DFM-0617-06 MP 13.01 Blue Ravine Launcher	Folsom	GT/GC	8/17/2015	NO	12/15/2015	2,793,610	1,280,067	4,073,678	1,523,732	204,527	1,785,014	610,340	328,888		4,105,340	
36	Completed	31087562	IU Upgrades	98	98C	In-Line Inspection	L-047B DFM-0617-03 MP 0.00-1.04 IU Upgrade	North Highlands	Barnard	8/24/2015	NO	10/4/2015	2,982,465	89,219	3,071,863	624,731	248,203	2,083,559	115,570	1,266,065	3,091,399		3,091,399
37	Completed	31086520	IU Upgrades	98	98C	In-Line Inspection	L-047H DFM-0617-07 MP 1.11 Quarry Receiver	Folsom	Barnard	8/15/2015	CNG	9/17/2015	3,971,680	3,816,651	362,079	4,178,730	923,196	339,909	2,115,001	800,625	(245,528)		4,216,938
38	Completed	74000912	IU Upgrades	98	98C	In-Line Inspection	L-044F L-402 MP 21.71 IU Upgrade Launcher & Receiver	Cottonwood	Barnard	3/23/2016	LNG/Blackout	7/29/2016	3,817,119	172,436	4,843,200	5,015,636	460,039	347,263	3,322,762	885,571	(1,828,517)		5,015,636
39	Completed	31086284	IU Upgrades	98	98C	In-Line Inspection	L-048A L-132A Sierra Vista Station IU Upgrade Launcher	Mountain View	GT/GC	5/30/2015	NO	9/8/2015	3,147,407	86,866	4,228,643	988,447	288,612	2,339,671	611,912	(1,395,458)		4,542,865	
40	Completed	31086479	IU Upgrades	98	98C	In-Line Inspection	L-045A DFM-0617-06 MP 11.01 Bridge St. Launcher	Folsom	GT/GC	8/17/2015	CNG	10/29/2015	2,924,344	2,277,187	740,806	3,017,993	1,199,035	204,564	851,332	763,062	(324,014)		3,017,993
41	Completed	31037507	IU Upgrades	98	98C	In-Line Inspection	L-045 L-114 MP 28.98-34.60 IU Upgrade	Livermore	Underground	6/15/2015	NO	7/30/2015	2,908,090	3,241,067	12,881	3,248,186	815,896	503,720	1,738,081	170,489	(166,309)		3,473,479
42	Completed	31167596	IU Upgrades	98	98C	In-Line Inspection	L-129A L-138 MP 38.58 IU Upgrade Launcher at Adams & Elm	Easton	GT/GC	7/28/2016	CNG	9/10/2016	2,886,425	167,420	2,434,344	2,601,764	635,578	299,280	458,190	1,208,716	284,661		2,601,764
43	Completed	74000910	IU Upgrades	98	98C	In-Line Inspection	L-044D L-402 MP 0.02 Add Off Tapped Off L-401 IU Upgrade	Redding	GT/GC	6/29/2015	NO	9/8/2015	2,696,961	2,155,493	17,285	2,172,779	1,149,986	194,991	571,470	256,332	524,182		2,172,779
44	Completed	30712760	IU Upgrades	98	98C	In-Line Inspection	L-056A L-215 West Ave Reg Station IU Upgrade Receiver	Turlock	Snelson	10/7/2015	NO	12/3/2015	1,971,855	2,444,818	73,347	2,518,165	752,480	223,713	1,347,115	194,857	(1,066,680)		3,038,535
45	Completed	31235352	IU Upgrades	98	98C	In-Line Inspection	L-049F DFM-1202-16 MP 3.34-4.24 IU Upgrade	Fresno	GT/GC	3/13/2016	TBD	4/24/2016	1,873,713	0	1,642,447	4,03							



TABLE 11-1<sup>(a)</sup>  
TRANSMISSION PIPELINE PROJECT SUMMARIES  
(CONTINUED)

Line No	Construction Phase	Order Number	Program Description	SAP M/WC	SAP MA <sup>(b)</sup>	Project Description	Project Name	City	Construction Contractor	Mobilization Date	CNG/LNG	Tie-in Date/ERO	Job Estimate Amount	Total Cost 2015 Actuals Full Year	Total Cost 2016 Actual YTD	Grand Total (2015 + 2016)	Labor Cost	Materials Cost	Contracts Cost	Other Cost	Variance to Budget (JE-Total Cost Inception to Date for Completed Projects)	Total Costs Inception to Date for Completed Projects
76	Completed	31219220	LI Upgrades	98	98C	In-Line Inspection	RT-750 L-119B MP 0.57 & MP 2.23 Unpluggable Features	Sacramento	GT/GC	4/18/2016	NO	5/4/2016	1,353,369	0	748,070	748,070	206,108	16,599	130,024	395,340	605,299	748,070
77	Completed	31101801	LI Upgrades	98	98C	In-Line Inspection	RT-115 L-021E MP 73.59 LI Dig #4 Replace Pipe (ID-25-4)	Geyserville	GT/GC	2/9/2015	NO	3/18/2015	810,828	977,585	592	978,177	420,976	(16,628)	384,232	189,597	(367,448)	1,178,276
78	Completed	31120713	LI Upgrades	98	98C	In-Line Inspection	RT-131 L-021E MP 83.11 Replace 12ft of 11" Pipe (ID-25-9)	Cloverdale	GT/GC	4/7/2015	NO	4/23/2015	469,508	414,280	18,624	432,904	213,348	14,255	143,049	62,252	36,449	433,059
79	Completed	31037510	LI Upgrades	98	98C	In-Line Inspection	IO-53C L-119A MP 9.69-12.15 LI Upgrade	West Sacramento	GT/GC	6/12/2015	CNG	7/23/2015	2,091,201	1,176,804	38,866	1,215,670	812,981	59,159	134,316	209,214	681,995	1,409,206
80	Completed	31086289	LI Upgrades	98	98C	In-Line Inspection	IO-52A SPS/L-191 Antioch Terminal LI Upgrade Launcher	Antioch	ARB	8/10/2015	NO	10/3/2015	3,190,796	3,871,598	(63,776)	3,807,822	791,289	673,183	2,213,042	130,308	(751,649)	3,882,445
81	Completed	31086466	LI Upgrades	98	98C	In-Line Inspection	IO-54A L-107 Milpitas Terminal LI Upgrade	Fremont	GT/GC	7/1/2015	NO	5/7/2016	2,867,540	3,813,925	3,428,230	7,242,156	225,906	957,294	1,012,619	3,046,337	(6,411,716)	7,285,256
82	Completed	31100867	LI Upgrades	98	98C	In-Line Inspection	LI-112C L-021E LI Upgrade Launcher	Ukiah	TBD	12/4/2015	LNG	12/4/2015	1,885,470	55,757	1,737,517	1,793,274	483,366	179,270	970,466	160,173	92,196	1,793,274
83	Completed	31135666	LI Upgrades	98	98C	In-Line Inspection	L-149 L-300B MP 393.78 LI Upgrade Convert Launcher	Mendota	GT/GC	5/30/2016	NO	6/18/2016	684,728	4,254	1,021,860	1,026,114	244,531	160,709	185,627	435,246	(341,387)	1,026,114
84	Completed	31135673	LI Upgrades	98	98C	In-Line Inspection	L-235A L-021F MP 0.0-21.16 LI Upgrade	San Rafael	ARB	4/18/2016	NO	6/9/2016	4,157,393	11,030	1,286,189	1,297,219	147,079	97,306	822,998	229,836	2,860,174	1,297,219
85	Completed	31135748	LI Upgrades	98	98C	In-Line Inspection	L-235B L-021F MP 0.0-20.83 LI Upgrade	San Rafael	ARB	4/18/2016	NO	6/3/2016	4,157,393	2,880	1,284,639	1,287,519	140,015	97,306	822,998	227,200	2,869,874	1,287,519
86	Completed	31164498	LI Upgrades	98	98C	In-Line Inspection	L-115A DFM-1202-16 MP 0-2.59 LI Upgrade Receiver	Fresno	GT/GC	5/31/2016	CNG	8/24/2016	3,140,716	122,260	2,789,780	2,912,040	779,852	209,208	589,985	1,332,995	228,676	2,912,040
87	Completed	31167441	LI Upgrades	98	98C	In-Line Inspection	L-105C DFM-2408-05 Santa Rita Station LI Upgrade	Dublin	ARB	10/21/2015	NO	12/9/2015	4,222,282	2,026,954	88,379	2,115,333	444,829	161,186	68,525	1,440,793	2,106,949	2,115,333
88	Completed	31167597	LI Upgrades	98	98C	In-Line Inspection	L-100B L-142N LI Upgrade Launcher	Bakersfield	GT/GC	5/4/2016	NO	7/21/2016	3,639,350	17,695	1,764,516	1,782,210	520,247	194,745	206,374	860,884	1,857,140	1,782,210
89	Completed	31184770	LI Upgrades	98	98C	In-Line Inspection	L-110D L-119C MP 6.63 LI Upgrade	North Highlands	Barnard	1/4/2016	NO	1/4/2016	20,461	17,916	38,377	12,616	9,407	11,677	4,677	38,377	38,377	38,377
90	Completed	31185459	LI Upgrades	98	98C	In-Line Inspection	L-148B L-124A MP 0.0 LI Upgrade Convert Receiver	Lincoln	GT/GC	2/4/2016	NO	2/10/2016	737,754	16,890	687,372	704,262	148,206	65,524	249,520	241,012	33,492	704,262
91	Completed	31186163	LI Upgrades	98	98C	In-Line Inspection	L-155 L-021C,D,E MP 53.12 LI Upgrade Convert Receiver	Santa Rosa	GT/GC	6/20/2016	NO	7/22/2016	1,377,501	1,103	1,376,398	1,377,501	399,801	121,921	116,612	739,797	1,377,501	1,377,501
92	Completed	31186610	LI Upgrades	98	98C	In-Line Inspection	IO-56F L-215 MP 19.48 Hwy 99 HDD LI Upgrade	Turlock	Snelson	4/19/2016	CNG	5/13/2016	2,373,576	38,209	2,063,450	334,595	111,804	2,063,853	313,197	2,063,450	130,126	2,063,450
93	Completed	31196096	LI Upgrades	98	98C	In-Line Inspection	IO-56G L-215 LI Upgrade Launcher Conversion	Turlock	GT/GC	3/28/2016	NO	4/27/2016	691,203	93,191	1,064,287	1,155,478	337,696	56,910	179,797	58,165	(464,275)	1,155,478
94	Completed	31217546	LI Upgrades	98	98C	In-Line Inspection	IO-48D L-132A LI Upgrade Replace Elbow	Mountain View	Underground	6/8/2016	NO	7/12/2016	1,598,727	0	1,506,970	1,506,970	267,459	12,531	994,308	232,672	86,787	1,506,970
95	Completed	31222758	LI Upgrades	98	98C	In-Line Inspection	IO-50C DFM-0126-01 MP 0.26 Blowdown LI Upgrade	Richmond	ARB	7/11/2016	CNG	7/27/2016	932,197	0	1,160,389	1,160,389	165,945	56,560	644,529	295,335	(228,192)	1,160,389
96	Completed	74007717	LI Upgrades	98	98C	In-Line Inspection	IO-44C L-402 MP 0.02-9.54 LI Upgrade	Redding	Barnard	4/4/2016	LNG/Blackout	6/22/2016	3,398,252	473,454	1,761,612	2,235,066	639,616	23,408	990,006	582,036	1,163,186	2,235,066
97	Completed	74009009	LI Upgrades	98	98C	In-Line Inspection	IO-44B L-402 MP 30.52 LI Upgrade Receiver	Redding	Barnard	7/29/2016	LNG/Blackout	7/29/2016	#N/A	318,216	1,566,615	1,864,831	423,158	137,585	826,780	477,307	1,864,831	1,864,831
98	Completed	74004034	LI Upgrades	98	98C	In-Line Inspection	L-227 L-124A MP 20.65 LI Upgrade	Oliverhurst	GT/GC	4/4/2016	NO	4/30/2016	1,199,294	0	1,060,654	1,060,654	260,959	72,349	214,725	512,620	138,640	1,060,654
99	Completed	74005860	LI Upgrades	98	98C	In-Line Inspection	L-261 DFM-1202-16 Emergency LI Cut-out	Fresno	TBD	5/27/2016	TBD	6/6/2016	#N/A	0	274,837	274,837	16,233	20,170	200,296	38,138	274,837	274,837
100	Completed	84000660	Hydrostatic Testing - IM	HP	HPF	TIMP Projects	C-134 L-128 MP 0.4104 Casing Remediation	Hamilton City	#N/A	6/1/2015	#N/A	0	0	0	0	0	0	0	225	244,364	244,364	
101	Completed	84000660	Hydrostatic Testing - IM	HP	HPF	TIMP Projects	L-1003B L-402 MP 9.52-20.67 Test	Redding	Barnard	2/29/2016	LNG/Blackout	6/21/2016	9,765,559	128	9,011,183	9,011,312	214,910	302,536	4,983,129	1,576,635	745,248	9,011,312
102	Completed	84000661	Hydrostatic Testing - IM	HP	HPF	TIMP Projects	L-110B L-402 MP 27.41-38.15 Test	Redding	Barnard	4/9/2016	LNG/Blackout	7/29/2016	8,781,050	86	6,119,317	6,119,217	964,072	139,007	3,874,175	1,141,963	2,661,833	6,119,217
103	Completed	42485806	Hydrostatic Testing - IM	HP	HPF	TIMP Projects	L-1036A L-118A MP 64.517-66.208 Test	Atwater	Snelson	2/1/2016	LNG->50%	3/22/2016	8,126,936	298,106	4,043,480	4,341,586	575,193	21,595	3,068,985	675,813	3,785,530	4,341,586
104	Completed	42485826	Hydrostatic Testing - IM	HP	HPF	TIMP Projects	L-1017A DFM-7224-01 MP 6.00-6.09 Test	Modesto	Snelson	2/19/2016	NO	4/7/2016	7,567,661	313,749	5,855,656	5,499,405	595,220	44,327	4,082,881	776,977	2,068,257	5,499,405
105	Completed	42414134	Hydrostatic Testing - IM	HP	HPF	TIMP Projects	L-1002A L-121 MP 0-3.52 Test	Yuba City	ARB	3/14/2016	CNG->50%	5/21/2016	7,413,751	294,158	7,184,145	7,478,303	1,875,801	71,144	4,615,508	915,850	(64,552)	7,478,303
106	Completed	42410946	Hydrostatic Testing - IM	HP	HPF	TIMP Projects	L-094B L-121 DFM-1816-01 MP 9.55-10.73 Test	San Jose	Underground	9/10/2015	CNG->50%	9/1/2015	6,290,409	5,538,619	(5,305)	7,533,234	1,868,598	462,688	3,115,490	2,066,458	(1,242,455)	7,533,234
107	Completed	42414529	Hydrostatic Testing - IM	HP	HPF	TIMP Projects	L-1030 L-118A MP 20.71-28.89 Test	Madera	Snelson	7/31/2016	LNG->50%	9/21/2016	5,501,895	236,619	3,291,024	3,527,643	602,679	33,692	2,147,758	743,515	1,974,252	3,527,643
108	Completed	42169479	Hydrostatic Testing - IM	HP	HPF	TIMP Projects	L-1036A L-300B MP 47.72-41.77 92 Test	Morgan Hill	Underground	9/21/2015	CNG->25% ->50%	12/21/2015	5,435,809	6,292,022	517,951	6,809,973	1,328,489	246,706	4,983,222	341,556	(1,408,043)	6,843,852
109	Completed	42413386	Hydrostatic Testing - IM	HP	HPF	TIMP Projects	L-005A L-12 DFM-0042-01 MP 4.49-4.52 Test	San Rafael	ARB	7/28/2015	NO	10/21/2015	4,979,240	5,976,160	843,654	6,819,814	816,692	(3,091)	3,533,853	2,472,360	(1,840,574)	6,819,814
110	Completed	42165791	Hydrostatic Testing - IM	HP	HPF	TIMP Projects	L-1061A L-300A MP 0.647-1.186 Test	Needles	GT/GC	1/12/2016	NO	3/25/2016	3,833,180	182,256	4,979,481	5,161,737	1,686,745	272,447	1,248,151	1,954,393	(1,409,258)	5,242,438
111	Completed	42169902	Hydrostatic Testing - IM	HP	HPF	TIMP Projects	L-1067A DFM-8805-03 MP 0.0123-0.0140 Test	Mountain View	Underground	3/23/2016	NO	5/2/2016	3,743,326	94,564	2,951,307	3,045,871	477,697	24,674	2,335,199	208,301	67,074	3,070,252
112	Completed	42414134	Hydrostatic Testing - IM	HP	HPF	TIMP Projects	L-1011A L-181A MP 16.82986-19.65 Test	Pajaro	Underground	3/4/2016	CNG->25%	4/22/2016	3,506,778	90,371	2,240,866	2,331,237	440,444	19,365	1,571,657	299,771	1,178,541	2,331,237
113	Completed	42413386	Hydrostatic Testing - IM	HP	HPF	TIMP Projects	L-1025 DFM-4609-02 MP 0.002-0.624 Test	Sacramento	GT/GC	7/21/2016	CNG->25%	9/29/2016	3,106,006	120,157	1,276,499	1,396,657	512,262	10,142	432,668	452,185	1,709,349	1,396,657
114	Completed	42453000	Traditional LI Runs	HP	HPB	TIMP Projects	L-135 L-300B MP 393.78-450.78 LI Pugging & Analysis	Hollister	GT/GC	6/20/2016	NO	7/22/2016	3,049,226	6,960	2,466,972	2,473,933	482,477	140,884	1,303,611	547,161	575,293	2,473,933
115	Completed	42165792	Hydrostatic Testing - IM	HP	HPF	TIMP Projects	L-1064A L-300B MP 354.017-354.031 Test	Kettleman City	GT/GC	7/27/2015	NO	10/17/2015	2,984,649	2,537,781	386,058	2,924,839	1,474,370	237,328	1,041,955	171,185	(32,698)	3,017,346
116	Completed	42169478	Hydrostatic Testing - IM	HP	HPF	TIMP Projects	L-1063 L-300A MP 198.825-203 Test	North Edwards	GT/GC	8/17/2015	CNG->25%	11/9/2015	2,859,910	2,904,119	740,859	3,644,978	1,361,735	148,056	970,760	1,164,426	(920,728)	3,042,312
117	Completed	42124691	Traditional LI Runs	HP	HPB	TIMP Projects	IO-080 L-147 MP 0.003-5.57 Pugging & Analysis	San Carlos	GT/GC	1/15/2015	NO	5/3/2016	2,855,383	3,011,402	1,376,464	4,387,866	1,487,297	50,646	2,261,563	588,361	(2,186,929)	5,070,632
118	Completed	42329463	Hydrostatic Testing - IM	HP	HPF	TIMP Projects	L-1011A L-181A MP 23.68-25.08 Test	San Lorenzo	ARB	4/19/2016	NO	5/20/2016	2,848,969	128,405	2,590,853	2,719,258	506,572	49,874	1,983,361	179,451	129,712	2,719,258
119	Completed	42316168	Hydrostatic Testing - IM	HP	HPF	TIMP Projects	L-1080 L-300A MP 354.096-355.20 Test	Kettleman City	GT/GC	7/27/2015	NO	9/26/2015	2,806,384	1,476,883	44,020	1,810,956	893,190	49,841	291,608	995,382	1,476,883	2,806,384
120	Completed	42310511	Hydrostatic Testing - IM	HP	HPF	TIMP Projects	L-1081 DFM-0402-01 MP 2.233-2.351 Test	San Rafael	ARB	2/10/2016	NO	4/28/2016	2,793,948	129,537	3,651,911	4,461,268	647,221	118,571	3,264,182	431,294	(1,667,320)	4,461,268
121	Completed	42410944	Hydrostatic Testing - IM	HP	HPF	TIMP Projects	L															



TABLE 11-1<sup>(a)</sup>  
TRANSMISSION PIPELINE PROJECT SUMMARIES  
(CONTINUED)

Line No	Construction Phase	Order Number	Program Description	SAP M/WC	SAP MA <sup>(b)</sup>	Project Description	Project Name	City	Construction Contractor	Mobilization Date	CNG/LNG	Tie-in Date/ERO	Job Estimate Amount	Total Costs 2015 Actuals Full Year	Total Costs 2016 Actual YTD	Grand Total (2015 + 2016)	Labor Cost	Materials Cost	Contracts Cost	Other Cost	Variance to Budget (E-Total Cost Inception to Date for Completed Projects)	Total Costs Inception to Date for Completed Projects	
157	Completed	41613111	Traditional LI Runs	HP	HPB	TIMP Projects	I-085 L-021D MP 18.64-31.81 LI Piggings & Analysis	Santa Rosa	GT/GC	2/17/2015		3/31/2015	1,895,276	888,335	12,068	900,403	412,649	48,381	312,194	91,179	982,580	912,696	
158	Completed	41616084	Traditional LI Runs	HP	HPB	TIMP Projects	I-091 L-308A MP 0-42.86 LI Piggings & Analysis	Tracy	GT/GC	2/20/2015	CNG	5/15/2015	1,844,835	1,779,406	917	1,780,323	793,728	224,141	660,575	101,879	28,294	1,816,541	
159	Completed	41616091	Traditional LI Runs	HP	HPB	TIMP Projects	I-086 L-400 MP 82.33-142.61 LI Piggings & Analysis	Burney	GT/GC	7/15/2015		8/26/2015	3,309,397	3,884,700	36,560	3,921,260	1,085,731	182,822	2,574,746	77,962	(633,368)	3,942,765	
160	Completed	42087183	Traditional LI Runs	HP	HPB	TIMP Projects	I-078 DFM-1202-16 MP 2.59-4.60 Piggings & Analysis	Fresno	Snelson	6/17/2015	NO	4/30/2016	1,860,238	249,167	1,798,533	2,047,700	627,785	82,976	888,082	448,858	(187,557)	2,047,795	
161	Completed	42087240	Traditional LI Runs	HP	HPB	TIMP Projects	I-088 L-119A MP 9.69-16.46 LI Piggings & Analysis	West Sacramento	GT/GC	7/29/2015		2/18/2016	2,072,397	1,076,515	537,890	1,614,405	689,831	63,706	714,224	146,643	452,603	1,619,794	
162	Completed	42090982	Traditional LI Runs	HP	HPB	TIMP Projects	I-087 L-114 MP 28.98-34.06 LI Piggings & Analysis	Livermore	GT/GC	7/1/2015	CNG	11/18/2015	1,590,241	1,643,759	18,881	1,662,640	819,023	129,653	641,003	72,962	(77,555)	1,667,806	
163	Completed	42354995	Traditional LI Runs	HP	HPB	TIMP Projects	I-095A L-101 MP 33.96-34.28 Cased Pipe ILI 1A	Brisbane	GT/GC	5/11/2015	NO	6/3/2015	0	852,749	163,746	1,016,495	439,190	5,432	436,287	153,586	(1,016,495)	1,016,495	
164	Completed	42354996	Traditional LI Runs	HP	HPB	TIMP Projects	I-095B L-101 MP 34.59-34.86 Cased Pipe ILI 2A	Brisbane	GT/GC	5/11/2015	NO	6/5/2015	-	555,020	124,421	679,441	233,086	166	433,846	12,343		679,441	
165	Completed	42354997	Traditional LI Runs	HP	HPB	TIMP Projects	I-095C L-101 MP 35.49-35.85 Cased Pipe ILI 3A, 3B	Brisbane	ARB	7/15/2015	NO	10/22/2015	-	1,307,370	1,296,118	1,296,118	317,928	6,562	964,057	7,541		1,296,118	
166	Completed	42354998	Traditional LI Runs	HP	HPB	TIMP Projects	I-095D L-101 MP 35.85-36.97 Cased Pipe ILI 5A,B,C,D	Brisbane	ARB	4/7/2015	NO	10/21/2015	-	2,436,911	(42,514)	2,394,397	511,067	1,113	1,874,510	7,707		2,394,397	
167	Completed	42354999	Traditional LI Runs	HP	HPB	TIMP Projects	I-095E L-101 MP 43.35-43.85 Cased Pipe ILI 7A,7B	Brisbane	ARB	8/24/2015	NO	9/27/2015	-	1,909,970	139,017	2,048,987	551,337	3,779	1,559,669	34,003		2,048,987	
168	Completed	42355020	Traditional LI Runs	HP	HPB	TIMP Projects	I-095F L-101 MP 44.49-44.60 Cased Pipe ILI 8	Brisbane	GT/GC	4/6/2015	NO	4/20/2015	-	406,762	16,611	423,373	202,202	1,695	210,972	8,504		423,373	
169	Completed	42372595	Traditional LI Runs	HP	HPB	TIMP Projects	I-118 L-057A-MDI MP 0.616-0.91 Non-Traditional ILI	McDonald Island	Barnard	7/8/2015	TBD	8/22/2015	907,883	754,385	(30,096)	724,289	137,505	15,776	550,188	20,820		183,594	
170	Completed	42378422	Traditional LI Runs	HP	HPB	TIMP Projects	I-117 L-107 MP 32.46-32.45 Non-Traditional ILI	Fremont	ARB	6/16/2015		7/24/2015	1,014,566	1,834,263	24,161	1,858,424	415,981	90,530	1,355,606	(1,673)	(843,858)	1,858,424	
171	Completed	42413051	Hydrostatic Testing - IM	HP	HPF	TIMP Projects	T-1002 L-14-109 MP 2.71-3.094 Test	San Jose	Underground	8/10/2015	CNG-<25%	10/13/2015	-	1,723,950	25,199	1,749,149	340,672	28,873	1,284,201	95,402		1,749,149	
172	Completed	42413296	Hydrostatic Testing - IM	HP	HPF	TIMP Projects	T-1031 L-118A MP 28.89-37.3830 Test	Madera	Barnard	4/10/2015	CNG-<25% -<50%	5/30/2015	-	3,444,947	412,828	3,857,775	22,635	(2,911)	598,641	3,239,611			3,857,775
173	Completed	42413299	Hydrostatic Testing - IM	HP	HPF	TIMP Projects	T-1032 L-118A MP 37.725-43.64 Test	Chowchilla	Barnard	4/27/2015	CNG-<25% -<50%	6/26/2015	-	3,560,264	85,524	3,645,788	19,322	0	177,592	3,448,875			3,645,788
174	Completed	42413360	Hydrostatic Testing - IM	HP	HPF	TIMP Projects	T-1033 L-118A MP 54.75-60.2 Test	Merced	GT/GC	5/27/2015	CNG-<25%	10/5/2015	-	4,234,373	991,492	5,225,865	510,290	12,384	974,187	3,729,004			5,225,865
175	Completed	42413384	Hydrostatic Testing - IM	HP	HPF	TIMP Projects	T-1037 L-118A MP 72.72-73.24 Test	Livermore	Barnard	6/25/2015	CNG-<25%	9/4/2015	-	2,003,438	216,053	2,219,492	189,942	0	1,433,291	616,299			2,219,492
176	Completed	42414526	Hydrostatic Testing - IM	HP	HPF	TIMP Projects	T-1028 L-118A MP 12.55-20.39 Test	Madera	Barnard	8/21/2015	CNG-<25%	12/9/2015	-	5,538,308	580,722	6,119,030	773,518	43,487	521,609	4,780,417			6,119,030
177	Completed	42414537	Hydrostatic Testing - IM	HP	HPF	TIMP Projects	T-1079 DFM-7222-01 MP 0-0.87 Test	Ceres	GT/GC	2/24/2015	NO	4/24/2015	-	1,282,817	3,258	1,286,076	603	0	4,920	1,280,552			1,286,076
178	Completed	42435151	Traditional LI Runs	HP	HPB	TIMP Projects	I-146 L-109 MP 40.35-40.73 Non-Traditional ILI	Daly City	ARB	2/29/2016	NO	3/30/2016	1,939,133	71,802	1,834,402	1,906,204	332,088	11,066	1,452,498	110,552			32,928
179	Completed	42449498	Hydrostatic Testing - IM	HP	HPF	TIMP Projects	T-1111 DFM-7204-01 MP 0.00-1.993 Test	Atwater	Snelson	2/19/2016	CNG-<50%	4/27/2016	2,825,261	75,448	2,154,148	2,229,596	356,339	84,990	1,676,782	111,484			595,665
180	Completed	42453002	Traditional LI Runs	HP	HPB	TIMP Projects	I-130 DFM-0617-06 MP 11.01-13.01 ILI Piggings & Analysis	Folsom	GT/GC	1/6/2016	NO	1/26/2016	1,106,959	112,466	1,074,095	1,186,561	357,054	22,030	546,314	261,164			(79,603)
181	Completed	42453001	Traditional LI Runs	HP	HPB	TIMP Projects	I-137 L-131 MP 24.89-46.34 ILI Piggings & Analysis	Livermore	GT/GC	5/6/2016	TBD	5/17/2016	1,524,754	5,410	1,271,081	1,276,491	81,494	618,714	305,001			246,263	
182	Completed	42481118	Traditional LI Runs	HP	HPB	TIMP Projects	I-144 L-153 MP 26.0-26.48, MP 27.55-27.76 Non-Traditional ILI	Oakland	Pipetel	11/9/2015	CNG	12/12/2015	2,620,728	1,919,746	16,008	1,935,754	605,658	23,544	1,303,653	2,900			684,974
183	Completed	42483704	Hydrostatic Testing - IM	HP	HPF	TIMP Projects	T-1036B L-118A MP 66.21-67.639 Test	Atwater	Snelson	2/19/2016	CNG-<50%	4/27/2016	3,632,826	112,924	2,733,427	2,846,350	368,647	38,243	2,168,618	270,842			786,476
184	Completed	42486407	Hydrostatic Testing - IM	HP	HPF	TIMP Projects	T-1117 L-300B MP 161.01-161.04 Test	Hinkley	Snelson	2/26/2016	CNG-<25%	4/4/2016	3,623,862	49,046	3,567,964	3,617,011	489,715	176,792	2,738,005	211,698			6,852
185	Completed	42487731	Traditional LI Runs	HP	HPB	TIMP Projects	I-143 L-101 MP 42.16-42.45 Non-Traditional ILI	San Francisco	ARB	11/2/2015		12/2/2015	1,403,133	1,085,913	(69,363)	1,016,350	165,111	0	852,243	(1,004)			386,783
186	Completed	42489310	Traditional LI Runs	HP	HPB	TIMP Projects	I-157B L-101 MP 39.85-41.49 Non-Traditional ILI	Daly City	ARB	10/29/2015		11/18/2015	1,310,001	985,494	(66,297)	139,197	310,912	505	595,879	11,901			390,804
187	Completed	42504046	Hydrostatic Testing - IM	HP	HPF	TIMP Projects	T-1119 L-153 MP 1.51-3.576 Test	Newark	ARB	3/14/2016	NO	4/14/2016	2,460,178	107,801	1,764,913	1,872,814	390,158	58,830	1,326,273	187,553			587,364
188	Completed	42597592	Traditional LI Runs	HP	HPB	TIMP Projects	I-205 L-109 MP 7.5744-7.605 Non-Traditional ILI	Mountain View	Teichert	12/31/2015	NO	1/20/2016	1,215,764	223	1,205,541	1,205,764	112,959	4,222	654,862	433,721			10,000
189	Completed	84000705	Traditional LI Runs	HP	HPB	TIMP Projects	I-208 L-116 MP 12.70-12.85 Emergent Non-Traditional ILI	Sacramento	GT/GC	7/11/2016	NO	10/15/2016	2,781,308	0	2,144,782	327,793	69,945	1,538,187	208,856			636,526	
190	Completed	84000740	Traditional LI Runs	HP	HPB	TIMP Projects	I-211 DFM-0609-02 MP 0-0.65 Non-Traditional ILI	Sacramento	GT/GC	7/31/2016	CNG	9/9/2016	331,299	0	25,826	25,826	9,455	9,428	0	6,942			25,826
191	Completed	84000743	Traditional LI Runs	HP	HPB	TIMP Projects	I-214 DFM-1402-01 MP 0-0.34 Non-Traditional ILI	San Francisco	Mears	6/6/2016	NO	7/9/2016	1,016,616	0	1,294,594	1,294,594	153,030	10,271	999,742	131,551			(277,978)
192	Completed	84000760	Hydrostatic Testing - IM	HP	HPF	TIMP Projects	T-1003D L-1402 CNG/LNG Support	Redding	Barnard	3/22/2016	LNG Backout	7/29/2016	-	649,264	649,264	26,345	87,707	(374,812)	120,024			649,264	
193	Completed	84001242	Traditional LI Runs	HP	HPB	TIMP Projects	I-222 DFM-0613-01 MP 0.00-1.14 Non-Traditional ILI	Sacramento	GT/GC	7/11/2016	NO	8/8/2016	1,738,846	0	729,711	66,662	31,884	559,300	729,711			1,009,235	
194	Completed	84001401	Traditional LI Runs	HP	HPB	TIMP Projects	I-245 L-057A MP 9.49-16.17 ILI Re-Inspection	Brentwood	GT/GC	9/7/2016	NO	9/7/2016	1,432,939	0	659,754	659,754	183,010	62,501	233,783	180,460			773,184
195	Completed	84001620	Traditional LI Runs	HP	HPB	TIMP Projects	I-253 L-121 Non-Traditional ILI Hydrotest Failure	Yuba City	ARB	5/2/2016	TBD	5/4/2016	-	0	185,238	185,238	1,308	168,084	0	15,846			185,238
196	Completed	41471917	Hydrostatic Tstng D.11-06-07	JT	JTC	Strength Test	T-283A L-131 DFM-8807-01 MP 0.4-2.98 Test	Sunnyvale	Underground	5/29/2015	CNG-<50%	8/1/2015	4,584,111	6,216,915	335,426	6,552,341	1,246,837	100,759	5,063,721	141,024			(2,345,118)
197	Completed	42197128	Hydrostatic Tstng D.11-06-07	JT	JTC	Strength Test	T-1078 L-021D MP 19.48-24.59 Test	Petaluma	GT/GC	8/17/2015	CNG-<25%	10/29/2015	3,647,622	10,980	188,315	199,295	1,929,485	46,134	1,071,214	(847,538)			3,426,361
198	Completed	42122926	Hydrostatic Tstng D.11-06-07	JT	JTC	Strength Test	T-1008 DFM-0402-01 MP 4.61-5.604 Test	San Rafael	ARB	7/29/2015	NO	1/27/2016	3,549,161	2,438,806	3,647,623	5,906,429	1,061,950	42,304	4,251,041	587,134			(2,420,055)
199	Completed	42349048	Hydrostatic Tstng D.11-06-07	JT	JTC	Strength Test	T-1401 L-114 MP 23.40-24.08 Test	Novato	ARB	8/18/2015	NO	10/30/2015	3,495,232	1,827,414	(204,688)	3,622,525	1,293,284	115,018	2,095,846	118,378			(127,294)
200	Completed	42349584	Hydrostatic Tstng D.11-06-07	JT	JTC	Strength Test	T-243B L-13 DFM-815-02 MP 11.52-15.866 Test	Montezuma	Snelson	5/18/2015	CNG-<50%	7/2/2015	3,163,802	3,065,792	3,065,792	3,098,945	843,201	225,053	2,001,251	30,435			(247,820)
201	Completed	42122923	Hydrostatic Tstng D.11-06-07	JT	JTC	Strength Test	T-1006A L-021G MP 13.73-14.97 Test	Woodside	GT/GC	2/29/2016	CNG-<25%	4/13/2016	1,201,749	120,586	1,063,564	1,884,150	722,179	34,526	788,120	339,325			1,937,091
202	Completed	42191618	Hydrostatic Tstng D.11-06-07	JT	JTC	Strength Test	T-1069 DREG4738 MP 0.030-5.705 Test	Palo Alto	Underground	7/14/2016	CNG-<25%	8/24/2016	2,766,195	156,038	1,798,239	1,954,277	527,474	1,051	1,231,615	194,138			811,917
203	Completed	40755080																					

TABLE 11-1<sup>(a)</sup>  
TRANSMISSION PIPELINE PROJECT SUMMARIES  
(CONTINUED)

Line No	Construction Phase	Order Number	Program Description	SAP MWC	SAP MA <sup>TM</sup>	Project Description	Project Name	City	Construction Contractor	Mobilization Date	CNG/LNG	Tie-In Date/ERO	Job Estimate Amount	Total Cost 2015 Actuals Full Year	Total Cost 2016 Actual YTD	Grand Total (2015 + 2016)	Labor Cost	Materials Cost	Contracts Cost	Other Cost	Variance to Budget (IE-Total Cost Inception to Date for Completed Projects)	Total Costs Inception to Date for Completed Projects	
237	Completed	3113645	LI Upgrades	98	98C	In-Line Inspection	I-043E L-109 MP 23.30 Switching Station LI Upgrade	Redwood City	ARR	11/17/2015	CNG	12/29/2015		2,749,981	1,898,002	4,647,983	1,048,149	501,223	2,535,987	560,623			
238	Completed	3116745	LI Upgrades	98	98C	In-Line Inspection	I-1000 L-142N MP 12.57-14.05 LI Upgrade	Bakersfield	GT/GC	8/8/2016	CNG	9/13/2016		63,621	620,443	684,064	210,392	5,695	137,988	330,779			
239	Completed	4242620	LI Direct Exam and Repair	HP	HPI	TIMP Projects	RT-627 L-300A MP 449.67 LI Replace (ID-49-6)	Hollister	Underground	8/29/2016	CNG	9/20/2016		61,737	594,660	656,397	149,638	8,714	456,209	41,836		951,450	
240	Completed	4172055	LI Direct Exam and Repair	HP	HPI	TIMP Projects	D-046A L-172A MP 54.83 Direct Examination and Repair ID-22-1	Dunnigan	GT/GC	8/10/2015		8/20/2015		482,034	42,951	524,985	296,556	10,298	184,193	33,938		375,897	
241	Completed	42101642	LI Direct Exam and Repair	HP	HPI	TIMP Projects	D-249E L-300A MP 449.67 Direct Examination and Repair ID-49-6 *	Hollister	Teichert	5/11/2015		5/28/2015		1,612,768	468,719	2,081,487	543,202	1,950	1,488,198	48,137		320,318	
242	Completed	42101652	LI Direct Exam and Repair	HP	HPI	TIMP Projects	D-253C L-300A MP 460.09 Direct Examination and Repair ID-52-3	Hollister	Teichert	7/20/2015		7/27/2015		474,011	2,008,177	2,482,188	438,461	1,409	1,895,426	146,891		334,256	
243	Completed	42101657	LI Direct Exam and Repair	HP	HPI	TIMP Projects	D-245G L-021E MP 70.07 Direct Examination and Repair ID-47-29 *	Geyerville	GT/GC	4/1/2015		4/17/2015		1,360,188	827,474	2,187,662	821,392	121,755	935,023	309,491		384,641	
244	Completed	42101658	LI Direct Exam and Repair	HP	HPI	TIMP Projects	D-121B L-101 MP 7.45 Direct Examination and Repair ID-30-2	Mountain View	GT/GC	4/8/2015		4/16/2015		1,379,747	26,657	1,406,403	400,336	37,458	829,566	139,043			
245	Completed	42280022	LI Direct Exam and Repair	HP	HPI	TIMP Projects	D-242B L-114 MP 14.82 Direct Examination and Repair ID-46-2	Brentwood	Mears	9/28/2015		10/6/2015		507,662	(52,815)	454,848	106,579	0	299,718	48,550			
246	Completed	42285318	LI Direct Exam and Repair	HP	HPI	TIMP Projects	D-386A L-057E MP 2.91 Direct Examination and Repair ID-44-1	McDonald Island	Teichert	8/8/2016		9/8/2016		19,033	377,983	397,016	109,027	0	235,952	52,038			
247	Completed	4231141	LI Direct Exam and Repair	HP	HPI	TIMP Projects	D-248A L-300B MP 300.75 Direct Examination and Repair ID-48-1	Shafter	GT/GC	2/15/2015		2/15/2015		359,200	35,762	394,962	264,611	10,361	168,348	(46,358)			
248	Completed	42369875	LI Direct Exam and Repair	HP	HPI	TIMP Projects	D-254A L-401 MP 85.53 Direct Examination and Repair ID-53-1	Burney	ARR	11/17/2015		11/23/2015		620,404	552,889	1,173,293	271,862	1,315	786,066	111,690			
249	Completed	42379555	LI Direct Exam and Repair	HP	HPI	TIMP Projects	D-388A L-300B MP 306.64 Direct Examination and Repair ID-56-1	Wasco	Teichert	10/8/2015		10/27/2015		1,177,819	159,060	1,336,879	388,535	3,292	917,646	27,406			
250	Completed	42392604	LI Direct Exam and Repair	HP	HPI	TIMP Projects	D-396A L-021D MP 25.24 Direct Examination and Repair ID-58-1	Petaluma	GT/GC	6/8/2015		6/15/2015		143,394	66	143,460	85,034	4,188	53,977	262			
251	Completed	42409154	LI Direct Exam and Repair	HP	HPI	TIMP Projects	D-389A L-303 MP 11.87 Direct Examination and Repair ID-57-1	Brentwood	GT/GC	5/8/2015		5/13/2015		295,144	99	295,243	1,983	0	10,235	283,026			
252	Completed	42466821	LI Direct Exam and Repair	HP	HPI	TIMP Projects	D-181A L-101 MP 35.48 Immediate Anomaly Repair and Casing Remediation ID-61-1	South San Francisco	ARR	9/9/2015		9/17/2015		517,030	92,092	609,122	69,933	7,898	424,558	106,734			
253	Completed	42469377	Traditional LI Runs	HP	HPB	TIMP Projects	I-043F L-109 MP 0.2 Non-Traditional LI	Milpitas	Underground	10/2/2015	NO	10/6/2015		159,749	2,555	162,304	69,502	0	90,593	2,209			
254	Completed	42404806	Hydrostatic Tstng ID-11-06-017	JT	JTC	Strength Test	D-431B DFM-0621-01 MP 0.3588 MAOP Validation Dig TD15-06-2	Woodland	ARR	11/10/2015		11/12/2015		585,586	115,804	701,390	356,424	36,401	296,299	12,266			
255	Construction	42600890	LI Direct Exam and Repair	HP	HPI	TIMP Projects	RT-710 L-400 MP 85.22 LI Cut Out (ID-35)	Burney	TBD	#N/A	CNG	10/6/2016		0	58,532	58,532	31,198	1,350	15,609	10,376		58,532	
256	Construction	8119556	Casing Mitigation	HP	HPG	TIMP Projects	C-350 Casings Investigation 2014	PW	Southern Cross			11/6/2016		0	(50)	(50)	108,246	0	(205)	(108,090)		2,127,478	
257	Construction	41532445	Casing Mitigation	HP	HPG	TIMP Projects	C-135 DFM-2403-12 MP 2.15 Casing Remediation	Union City	GT/GC	#N/A		10/6/2016		258,756	0	270	350	0	275	(355)		433,647	
258	Construction	41562415	LI Direct Exam and Repair	HP	HPI	TIMP Projects	D-169E P-1-400 MP 104.99 Geometry and MFL Dig ID-35-11	Whitmore	GT/GC	6/6/2016		6/13/2016		0	957,377	957,377	476,129	12,655	115,383	35,210	(174,891)		
259	Construction	41661856	LI Direct Exam and Repair	HP	HPI	TIMP Projects	D-241A L-153 MP 14.85 Direct Examination and Repair ID-45-8	San Lorenzo	Mears	2/8/2016		11/10/2016		70,421	1,935,482	2,005,903	433,864	3,291	1,443,928	124,820			
260	Construction	42280023	LI Direct Exam and Repair	HP	HPI	TIMP Projects	D-250A-E L-131-30 MP 54.71 Direct Examination and Repair ID-50-5	Fremont	Mears	4/27/2016		12/22/2016		52,065	1,009,025	1,061,090	247,917	900	754,436	57,837			
261	Construction	42361620	LI Direct Exam and Repair	HP	HPI	TIMP Projects	D-286A-H L-300A MP 316.87 Direct Examination and Repair ID-54-5	Wasco	GT/GC	5/9/2016		11/22/2016		36,118	648,068	684,186	290,509	25,306	214,430	153,942			
262	Construction	42480592	LI Direct Exam and Repair	HP	HPI	TIMP Projects	D-167A-C L-303 MP 6.62 Direct Examination and Repair ID-33-2	Brentwood	Mears	8/9/2016		5/5/2017		24,889	221,374	246,263	99,681	0	123,175	23,407			
263	Construction	42557588	LI Direct Exam and Repair	HP	HPI	TIMP Projects	D-168A-P L-002(S) MP 44.21 Direct Examination and Repair ID-34-1	Mendota	Mears	5/16/2016		10/28/2016		56,244	3,411,481	3,467,725	1,113,410	57,792	1,557,647	738,875			
264	Construction	42567963	LI Direct Exam and Repair	HP	HPI	TIMP Projects	D-170A-D L-101 MP 35.57 Direct Examination and Repair ID-36-3	South San Francisco	Underground	6/6/2016		11/2/2016		10,126	843,706	853,832	222,794	1,150	504,771	125,716			
265	Construction	42671516	LI Direct Exam and Repair	HP	HPI	TIMP Projects	D-580A-M L-147 MP 1.84 LI Direct Exam & Repair ID-67-4	San Carlos	Teichert	6/21/2016		5/15/2017		0	1,150,493	1,150,493	198,054	1,672	888,505	62,262			
266	Construction	74005280	Vintage Pipe Replacement	75	75E	Pipe Replacement	R-824 L-153 0.52MI MP 25.96-26.48 Replace	Oakland	ARR	8/10/2016		10/25/2016	10,775,403	0	6,374,544	533,312	656,131	6,374,544	1,794,062				
267	Construction	30822663	Vintage Pipe Replacement	75	75E	Pipe Replacement	R-306 L-114 MP 7.32 Retire San Joaquin River Crossing	Sherman Island	ARR	8/18/2016		TBD	4,842,499	316,673	2,421,598	2,738,271	385,721	18,547	1,891,262	442,741			
268	Construction	31056628	Vintage Pipe Replacement	75	75E	Pipe Replacement	R-303 L-132 MP 0.93-1.87 Replace	San Jose	Underground	9/19/2016		11/22/2016		146,834	1,110,344	1,257,178	201,495	270,414	479,490	305,779			
269	Construction	31100829	LI Upgrades	98	98C	In-Line Inspection	I-110B L-119C MP 0.0-6.69 LI Upgrade	North Highlands	GT/GC	7/12/2016		11/6/2016		165,356	2,033,777	2,199,133	636,897	199,569	355,269	1,007,398			
270	Construction	31167444	LI Upgrades	98	98C	In-Line Inspection	I-100C L-142N MP 8.59-11.30 LI Upgrade	Bakersfield	GT/GC	9/13/2016		11/18/2016		119,017	611,498	730,516	134,321	139,990	276,947	179,257			
271	Construction	31174903	LI Upgrades	98	98C	In-Line Inspection	I-100E L-142N MP 11.30-12.57 LI Upgrade	Bakersfield	GT/GC	8/23/2016		11/5/2016		145,591	1,088,409	1,234,001	310,072	41,762	344,024	539,142			
272	Construction	31167594	LI Upgrades	98	98C	In-Line Inspection	I-110A L-119C LI Upgrade Launcher	North Highlands	GT/GC	7/12/2016		10/15/2016		140,443	891,591	1,032,034	292,944	263,074	83,647	392,370			
273	Construction	31100832	LI Upgrades	98	98C	In-Line Inspection	I-111C L-191 MP 3.88-9.44 LI Upgrade	Pittsburg	ARR	8/22/2016		10/15/2016		96,639	1,199,608	1,296,247	235,067	58,353	756,660	246,167			
274	Construction	31100866	LI Upgrades	98	98C	In-Line Inspection	I-100A L-142N LI Upgrade Receiver	Bakersfield	TBD	9/8/2016		10/28/2016		166,660	179,537	1,226,196	360,031	161,945	9,971	694,249			
275	Construction	31135753	LI Upgrades	98	98C	In-Line Inspection	I-111B L-191 LI Upgrade Receiver	Pittsburg	ARR	8/15/2016		10/15/2016		122,126	1,581,516	1,703,642	312,871	217,972	776,954	395,844			
276	Construction	31174905	LI Upgrades	98	98C	In-Line Inspection	I-100F L-142N V-12.06 MVR Replacement LI Upgrade	Bakersfield	GT/GC	8/23/2016		11/5/2016		57,906	249,566	307,482	86,826	38,273	61,759	120,625		519,114	
277	Construction	31184993	LI Upgrades	98	98C	In-Line Inspection	I-110C L-119C MP 3.54 & 3.65 LI Upgrade	North Highlands	GT/GC	7/12/2016		11/6/2016		27,575	341,865	369,440	110,086	29,737	30,157	199,460			
278	Construction	31202238	LI Upgrades	98	98C	In-Line Inspection	I-1280 L-132 Martin Station LI Upgrade	San Francisco	ARR	9/27/2016		11/13/2016		1,393	470,431	471,824	57,901	275,646	16,114	122,162			
279	Construction	42414530	Hydrostatic Testing - IM	HP	HPF	TIMP Projects	T-1035 L-118A MP 60.20-63.65 Test	Merced	Snelson	8/22/2016	CNG <25%	10/20/2016		243,002	1,588,947	1,831,950	245,968	33,478	1,068,111	484,393			
280	Construction	42414070	Hydrostatic Testing - IM	HP	HPF	TIMP Projects	T-1027 L-021M MP 7.97-12.05 Test	American Canyon	GT/GC	10/2/2016	CNG <25%	10/12/2016		3,901,141	137,553	1,122,858	1,260,811	580,814	31,555	184,754	463,287		
281	Construction	42541519	Hydrostatic Testing - IM	HP	HPF	TIMP Projects	T-1026C DFM-0613-01 MP 3.88-5.29 Test	Sacramento	GT/GC	7/29/2016	CNG <25%	11/3/2016		16,836	999,584	1,016,420	380,602	25,140	294,697	315,981			
282	Construction	84002141	Traditional LI Runs	HP	HPB	TIMP Projects	I-220 L-401 MP 317.96-428.05 LI Piggng & Analysis	Byron	GC/ARR	9/17/2016		TBD	2,583,952	0	734,920	734,920	196,561	158,850	180,171	199,338	670,868	1,913,084	
283	Construction	42414071	Hydrostatic Testing - IM	HP	HPF	TIMP Projects	T-1052 L-136 MP 5.87-12.79 Test	Chico	GT/GC	7/27/2016	CNG <25% <50%	11/1/2016		164,266	1,196,886	1,361,152	570,376	41,100	410,235	339,441			
284	Construction	42794154	LI Direct Exam and Repair	HP	HPI	TIMP Projects	RT-871 DFM-01613-01 MP 3.85-4.13 Cut Out	Sacramento	GT/GC	9/26/2016		10/26/2016		0	54,702	54,702	27,188	0	0	27,514		957,377	
285	Construction	41661851	Traditional LI Runs	HP	HPB	TIMP Projects	I-027 L-132 MP 0.00-31.93 Piggng & Analysis	Milpitas	GT/GC	8/30/2016		10/10/2017		3,540,216	2,500,121	6,040,337	2,757,898	474,395	1,759,411	1,048,633		348,529	
286	Construction	42386773	Traditional LI Runs	HP	HPB	TIMP Projects	I-077 L-138 MP 65.09-49.43 Piggng & Analysis	Fresno	GT/GC	6/17/2015		10/5/2016		643,271	307,887	951,159	326,014	26,387	491,462	107,315		233,376	
287	Construction	42453001	Traditional LI Runs	HP	HPB	TIMP Projects	I-138 L-100 MP 138.46-150.14 LI Piggng & Analysis	San Jose	GT/GC	7/15/2016		10/24/2017		25,235	837,488	862,723	248,168	85,427	221,690	282,203			
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TABLE 11-1<sup>(a)</sup>  
TRANSMISSION PIPELINE PROJECT SUMMARIES  
(CONTINUED)

Line No	Construction Phase	Order Number	Program Description	SAP MWC	SAP MA <sup>(b)</sup>	Project Description	Project Name	City	Construction Contractor	Mobilization Date	CNG/LNG	Tie-in Date/EDRO	Job Estimate Amount	Total Cost 2015 Actuals Full Year	Total Cost 2016 Actual YTD	Grand Total (2015 + 2016)	Labor Cost	Materials Cost	Contracts Cost	Other Cost	Variance to Budget (IE-Total Cost Inception to Date for Completed Projects)	Total Costs Inception to Date for Completed Projects
312	Non-project costs	30983251	Vintage Pipe Replacement	75	75E	Pipe Replacement								(35,453)	0	(35,453)	1,313	0	0	(36,767)		
313	Non-project costs	30997328	Vintage Pipe Replacement	75	75E	Pipe Replacement								5,496	0	5,496	1,866	0	3,385	244		
314	Non-project costs	31000411	Vintage Pipe Replacement	75	75E	Pipe Replacement								(6,450)	0	(6,450)	0	0	0	(6,450)		
315	Non-project costs	31013175	Pipe Rplcmnt - Oth PL Sfty Inv	75	75O	Pipe Replacement								5,429	0	5,429	1,931	0	1,956	1,542		
316	Non-project costs	31015723	Pipe Rplcmnt - Oth PL Sfty Inv	75	75O	Pipe Replacement								(934)	0	(934)	0	0	0	(934)		
317	Non-project costs	31017637	Shallow Pipe	75	75M	Pipe Replacement								(171)	0	(171)	0	0	0	(171)		
318	Non-project costs	31029845	Vintage Pipe Replacement	75	75E	Pipe Replacement								10,719	0	10,719	6,269	0	4,350	100		
319	Non-project costs	31034994	Vintage Pipe Replacement	75	75E	Pipe Replacement								12,724	0	12,724	8,467	(142)	4,296	103		
320	Non-project costs	31045235	Vintage Pipe Replacement	75	75E	Pipe Replacement								578	0	578	534	0	0	45		
321	Non-project costs	31052522	Vintage Pipe Replacement	75	75E	Pipe Replacement								(3,525)	0	(3,525)	(2,934)	0	0	(591)		
322	Non-project costs	31078715	Vintage Pipe Replacement	75	75E	Pipe Replacement								(146)	0	(146)	0	0	0	(146)		
323	Non-project costs	31081613	Vintage Pipe Replacement	75	75E	Pipe Replacement								(4,380)	0	(4,380)	282	0	(6,036)	1,374		
324	Non-project costs	31081617	Vintage Pipe Replacement	75	75E	Pipe Replacement								(5,084)	0	(5,084)	7,341	0	(1,50)	(12,276)		
325	Non-project costs	31098475	Pipe Replacement Class Locn	75	75H	Pipe Replacement								0	0	0	8,247	0	0	(8,247)		
326	Non-project costs	31101243	Vintage Pipe Replacement	75	75E	Pipe Replacement								0	0	0	737	0	(737)	0		
327	Non-project costs	31101245	Vintage Pipe Replacement	75	75E	Pipe Replacement								0	0	0	22,337	0	(22,337)	0		
328	Non-project costs	31105404	Pipe Replacement Class Locn	75	75H	Pipe Replacement								(21,649)	0	(21,649)	2,122	(18,305)	(25,785)	20,320		
329	Non-project costs	31105405	Pipe Replacement Class Locn	75	75H	Pipe Replacement								(16,700)	0	(16,700)	560	0	(2,645)	(14,615)		
330	Non-project costs	31105406	Pipe Replacement Class Locn	75	75H	Pipe Replacement								(104)	0	(104)	0	0	0	(104)		
331	Non-project costs	31130230	Vintage Pipe Replacement	75	75E	Pipe Replacement								0	0	0	105	0	0	(105)		
332	Non-project costs	31133509	Vintage Pipe Replacement	75	75E	Pipe Replacement								0	0	0	1,028	0	(1,028)	0		
333	Non-project costs	31147760	Vintage Pipe Replacement	75	75E	Pipe Replacement								0	0	0	528	0	0	(528)		
334	Non-project costs	31152671	Vintage Pipe Replacement	75	75E	Pipe Replacement								6,548,618	0	6,548,618	884,870	158,020	0	5,505,728		
335	Non-project costs	31179283	Vintage Pipe Replacement	75	75E	Pipe Replacement								69	0	69	61	0	0	8		
336	Non-project costs	31180150	Vintage Pipe Replacement	75	75E	Pipe Replacement								75	0	75	1,132	0	(1,132)	0		
337	Non-project costs	30604187	Vintage Pipe Replacement	75	75E	Pipe Replacement							9,494,617	27,268	3,479	30,746	2,883	19,116	1,013	7,734		
338	Non-project costs	30754673	Vintage Pipe Replacement	75	75E	Pipe Replacement							4,087,926	56,973	4,571	61,544	17,190	3,265	41,022	66		
339	Non-project costs	31029545	Vintage Pipe Replacement	75	75E	Pipe Replacement							963,682	3,641	0	3,641	953	1,513	1,122	52		
340	Non-project costs	31042670	Vintage Pipe Replacement	75	75E	Pipe Replacement							273,121	4,518	2,637	7,156	2,536	0	2,865	1,754		
341	Non-project costs	30952250	Pipe Rplcmnt - Oth PL Sfty Inv	75	75O	Pipe Replacement							140,818	22,541	967	23,508	12,442	0	10,623	444		
342	Non-project costs	30982713	Vintage Pipe Replacement	75	75E	Pipe Replacement							124,473	3,835	0	14,456	5,398	0	7,772	1,286		
343	Non-project costs	31015140	Vintage Pipe Replacement	75	75E	Pipe Replacement							85,801	458	1,168	1,626	796	0	0	830		
344	Non-project costs	30982018	Vintage Pipe Replacement	75	75E	Pipe Replacement							73,522	15,882	22,025	37,907	16,550	0	18,417	2,941		
345	Non-project costs	1009135	Vintage Pipe Replacement	75	75E	Pipe Replacement								(879,962)	12,500	(867,462)	(15,886)	(846,321)	0	(5,254)		
346	Non-project costs	7028065	Pipe Rplcmnt - Oth PL Sfty Inv	75	75O	Pipe Replacement								354	2,369	2,723	601	0	2,120	2		
347	Non-project costs	7062666	Vintage Pipe Replacement	75	75E	Pipe Replacement								4,403	3,489	7,892	0	0	0	7,892		
348	Non-project costs	30603495	Pipe Rplcmnt - Oth PL Sfty Inv	75	75O	Pipe Replacement								13,180	10,444	23,624	0	0	0	23,625		
349	Non-project costs	30603580	Vintage Pipe Replacement	75	75E	Pipe Replacement								(267,314)	9,802	(257,512)	(86,920)	(173)	(2,473)	(167,946)		
350	Non-project costs	30604188	Vintage Pipe Replacement	75	75E	Pipe Replacement								(89,047)	8,578	(80,469)	14,904	(148,544)	50,443	2,729		
351	Non-project costs	30604312	Pipe Rplcmnt - Oth PL Sfty Inv	75	75O	Pipe Replacement								893	0	893	796	0	0	97		
352	Non-project costs	30605992	Vintage Pipe Replacement	75	75E	Pipe Replacement								3,052	(297)	2,754	541	0	1,369	845		
353	Non-project costs	30625991	Vintage Pipe Replacement	75	75E	Pipe Replacement								5,668	7,204	12,871	2,392	0	9,937	543		
354	Non-project costs	30711380	Vintage Pipe Replacement	75	75E	Pipe Replacement								674	6,207	6,881	2,179	0	2,193	2,510		
355	Non-project costs	30712124	Vintage Pipe Replacement	75	75E	Pipe Replacement								8,196	930	9,126	2,398	0	1,809	4,919		
356	Non-project costs	30712770	Vintage Pipe Replacement	75	75E	Pipe Replacement								(215)	(2,745)	(2,960)	4,445	0	(7,405)	0		
357	Non-project costs	30762331	Vintage Pipe Replacement	75	75E	Pipe Replacement								748	593	1,342	0	0	0	1,342		
358	Non-project costs	30815786	Shallow Pipe	75	75M	Pipe Replacement								16,180	(216,424)	(200,243)	(44,937)	0	(61,077)	(94,230)		
359	Non-project costs	30823822	Vintage Pipe Replacement	75	75E	Pipe Replacement								92,207	(5,176)	87,031	60,971	(2,605)	8,606	20,059		
360	Non-project costs	30824106	Vintage Pipe Replacement	75	75E	Pipe Replacement								2,736	3,040	5,776	699	0	3,899	1,177		
361	Non-project costs	30837881	Vintage Pipe Replacement	75	75E	Pipe Replacement								5,957	4,721	10,678	0	0	0	10,678		
362	Non-project costs	30841072	Vintage Pipe Replacement	75	75E	Pipe Replacement								975	773	1,748	0	0	0	1,748		
363	Non-project costs	30842208	Vintage Pipe Replacement	75	75E	Pipe Replacement								24,232	(324,119)	(299,888)	(48,085)	0	(187,001)	(64,802)		
364	Non-project costs	30844845	Pipe Rplcmnt - Oth PL Sfty Inv	75	75O	Pipe Replacement								4,579	1,827	6,407	845	0	1,668	3,894		
365	Non-project costs	30869840	Vintage Pipe Replacement	75	75E	Pipe Replacement								1,860	191	2,051	598	0	55	1,398		
366	Non-project costs	30879385	Vintage Pipe Replacement	75	75E	Pipe Replacement								6,370	4,965	11,335	995	3,139	4,330	2,871		
367	Non-project costs	30889911	Pipe Rplcmnt - Oth PL Sfty Inv	75	75O	Pipe Replacement								1,821	(24,359)	(22,538)	0	0	0	(22,538)		
368	Non-project costs	30894888	Vintage Pipe Replacement	75	75E	Pipe Replacement								0	5,110	5,110	1,155	0	3,955	0		
369	Non-project costs	30903152	Vintage Pipe Replacement	75	75E	Pipe Replacement								3,333	0	3,333	402	0	2,892	40		
370	Non-project costs	30912804	Vintage Pipe Replacement	75	75E	Pipe Replacement								2,330	(31,165)	(28,835)	(20,685)	0	(14)	(8,136)		
371	Non-project costs	30915469	Pipe Rplcmnt - Oth PL Sfty Inv	75	75O	Pipe Replacement								3,651	2,893	6,544	0	0	0	6,544		
372	Non-project costs	30916141	Vintage Pipe Replacement	75	75E	Pipe Replacement								137	0	137	122	0	0	15		
373	Non-project costs	30920168	Vintage Pipe Replacement	75	75E	Pipe Replacement								551	0	551	491	0	0	60		
374	Non-project costs	30927064	Vintage Pipe Replacement	75	75E	Pipe Replacement								3,669	10,510	14,179	3,641	0	10,289	257		
375	Non-project costs	30927073	Pipe Rplcmnt - Oth PL Sfty Inv	75	75O	Pipe Replacement								2,120	5,098	7,218	2,463	0	4,496	259		
376	Non-project costs	30931157	Vintage Pipe Replacement	75	75E	Pipe Replacement								1,632	1,294	2,926	0	0	0	2,926		
377	Non-project costs	30933204	Vintage Pipe Replacement	75	75E	Pipe Replacement								2,720	18,573	21,293	1,907	0	17,136	2,250		
378	Non-project costs	30933788	Shallow Pipe	75	75M	Pipe Replacement								13,767	10,909	24,677	0	0	0	24,677		
379	Non-project costs	30937564	Shallow Pipe	75	75M	Pipe Replacement								10,959	8,684	19,644	0	0	0	19,644		
380	Non-project costs	30939480	Pipe Rplcmnt - Oth PL Sfty Inv	75	75O	Pipe Replacement								2,569	15,636	18,205	6,997	0	10,097	1,111		
381	Non-project costs	30940161	Vintage Pipe Replacement	75	75E	Pipe Replacement								0	2,273	2,273	459	0	1,814	0		
382	Non-project costs	30940446	Vintage Pipe Replacement	75	75E	Pipe Replacement								43	34	76	0	0	0	76		
383	Non-project costs	30948138	Pipe Replacement Class Locn	75	75H	Pipe Replacement								(698)	(3)	(700)	(524)	0	0	(176)		
384	Non-project costs	30949153	Shallow Pipe	75	75M	Pipe Replacement								7,471	5,920	13,390	0	0	0	13,390		
385	Non-project costs	30950265	Vintage Pipe Replacement	75	75E	Pipe Replacement								0	7,657	7,657	1,038	0	6,619	0		
386	Non-project costs	30955891	Pipe Replacement Class Locn	75	75H	Pipe Replacement								20,288	(4,714)	15,574	1,735	6,485	826	6,528		
387	Non-project costs	30956116	Vintage Pipe Replacement	75	75E	Pipe Replacement								667	0	667	650	0	0	17		
388	Non-project costs	30956751	Shallow																			

TABLE 11-1<sup>(a)</sup>  
TRANSMISSION PIPELINE PROJECT SUMMARIES  
(CONTINUED)

Line No	Construction Phase	Order Number	Program Description	SAP MWC	SAP MA <sup>(b)</sup>	Project Description	Project Name	City	Construction Contractor	Mobilization Date	CNG/LNG	Tie-in Date/EDRO	Job Estimate Amount	Total Cost 2015 Actuals Full Year	Total Cost 2016 Actual YTD	Grand Total (2015 + 2016)	Labor Cost	Materials Cost	Contracts Cost	Other Cost	Variance to Budget (IE-Total Cost Inception to Date for Completed Projects)	Total Costs Inception to Date for Completed Projects	
394	Non-project costs	30976644	Vintage Pipe Replacement	75	75E	Pipe Replacement								1,075	(8,462)	(7,388)	(6,064)	0	0	0	(1,323)		
395	Non-project costs	30976656	Vintage Pipe Replacement	75	75E	Pipe Replacement								178	141	319	0	0	0	0	319		
396	Non-project costs	30979930	Vintage Pipe Replacement	75	75E	Pipe Replacement								775	614	1,388	0	0	0	0	1,388		
397	Non-project costs	30980710	Pipe Rplcmnt - Oth PL Sfty Inv	75	75O	Pipe Replacement								1,170	927	2,096	0	0	0	0	2,096		
398	Non-project costs	30981611	Shallow Pipe	75	75M	Pipe Replacement								19,140	(169,273)	(150,133)	(118,821)	0	(750)	(30,561)			
399	Non-project costs	30983244	Vintage Pipe Replacement	75	75E	Pipe Replacement								1,051	833	1,884	0	0	0	0	1,884		
400	Non-project costs	30983247	Shallow Pipe	75	75M	Pipe Replacement								4,110	2,502	6,612	873	0	0	0	5,739		
401	Non-project costs	30983567	Vintage Pipe Replacement	75	75E	Pipe Replacement								0	10,868	10,868	2,265	0	7,501	1,102			
402	Non-project costs	30987152	Vintage Pipe Replacement	75	75E	Pipe Replacement								37	30	67	0	0	0	0	67		
403	Non-project costs	30990652	Vintage Pipe Replacement	75	75E	Pipe Replacement								3,803	6,047	9,850	4,659	0	2,503	2,689			
404	Non-project costs	30997414	Shallow Pipe	75	75M	Pipe Replacement								61,653	(157,988)	(96,335)	(38,439)	0	(51,129)	(6,768)			
405	Non-project costs	30999268	Vintage Pipe Replacement	75	75E	Pipe Replacement								28,163	22,316	50,479	0	0	0	0	50,479		
406	Non-project costs	31001946	Pipe Rplcmnt - Oth PL Sfty Inv	75	75O	Pipe Replacement								13,457	(16,877)	(3,421)	(1,193)	0	(1,797)	(430)			
407	Non-project costs	31004822	Vintage Pipe Replacement	75	75E	Pipe Replacement								4,620	0	4,620	1,766	0	1,631	1,223			
408	Non-project costs	31007745	Pipe Rplcmnt - Oth PL Sfty Inv	75	75O	Pipe Replacement								9,723	191	9,914	3,349	0	1,746	4,819			
409	Non-project costs	31010124	Vintage Pipe Replacement	75	75E	Pipe Replacement								0	2,064	2,064	466	0	1,598	0			
410	Non-project costs	31011204	Shallow Pipe	75	75M	Pipe Replacement								(8,440)	(32)	(8,473)	(4,047)	0	(3,102)	(1,323)			
411	Non-project costs	31017247	Vintage Pipe Replacement	75	75E	Pipe Replacement								14	11	25	0	0	0	0	25		
412	Non-project costs	31025517	Vintage Pipe Replacement	75	75E	Pipe Replacement								20,382	6,854	27,236	3,793	0	12,976	10,468			
413	Non-project costs	31029143	Vintage Pipe Replacement	75	75E	Pipe Replacement								4,844	(64,798)	(59,954)	(34,823)	0	(20,537)	(4,593)			
414	Non-project costs	31029854	Vintage Pipe Replacement	75	75E	Pipe Replacement								4,663	738	5,401	1,188	0	1,390	2,823			
415	Non-project costs	31031945	Vintage Pipe Replacement	75	75E	Pipe Replacement								26	20	46	0	0	0	0	46		
416	Non-project costs	31033196	Vintage Pipe Replacement	75	75E	Pipe Replacement								4,189	3,075	7,264	1,541	0	3,626	2,097			
417	Non-project costs	31033699	Pipe Replacement Class Locn	75	75H	Pipe Replacement								840	(7,023)	(6,184)	(5,016)	0	(250)	(918)			
418	Non-project costs	31038514	Vintage Pipe Replacement	75	75E	Pipe Replacement								(457,204)	23,200	(434,004)	(213,881)	(148,243)	40,373	(112,552)			
419	Non-project costs	31047191	Vintage Pipe Replacement	75	75E	Pipe Replacement								123	(1,644)	(1,521)	0	0	0	0	(1,521)		
420	Non-project costs	31055193	Pipe Rplcmnt - Oth PL Sfty Inv	75	75O	Pipe Replacement								10,850	11,642	22,492	13,504	0	7,811	1,176			
421	Non-project costs	31061062	Vintage Pipe Replacement	75	75E	Pipe Replacement								(127,082)	6,959	(120,124)	(38,946)	0	(702)	(80,476)			
422	Non-project costs	31069958	Vintage Pipe Replacement	75	75E	Pipe Replacement								(9,514)	(141)	(9,654)	(6,500)	0	0	(3,155)			
423	Non-project costs	31073094	Vintage Pipe Replacement	75	75E	Pipe Replacement								18,678	3,221	21,899	16,633	0	2,978	2,288			
424	Non-project costs	31081934	Vintage Pipe Replacement	75	75E	Pipe Replacement								56,360	(42,819)	13,541	5,799	0	6,669	1,073			
425	Non-project costs	31083050	Pipe Rplcmnt - Oth PL Sfty Inv	75	75O	Pipe Replacement								1,703	8,283	9,987	3,973	0	0	6,014			
426	Non-project costs	31083067	Pipe Rplcmnt - Oth PL Sfty Inv	75	75O	Pipe Replacement								166,418	(186,225)	(19,807)	(12,892)	0	(4,906)	(2,009)			
427	Non-project costs	31087247	Pipe Rplcmnt - Oth PL Sfty Inv	75	75O	Pipe Replacement								119,991	125,794	245,786	118,358	14,056	34,706	78,665			
428	Non-project costs	31088892	Pipe Rplcmnt - Oth PL Sfty Inv	75	75O	Pipe Replacement								27,554	(67,410)	(39,856)	21,868	0	80	(61,804)			
429	Non-project costs	31090555	Vintage Pipe Replacement	75	75E	Pipe Replacement								108,056	2,898	110,954	20,429	368	87,800	2,357			
430	Non-project costs	31091832	Pipe Rplcmnt - Oth PL Sfty Inv	75	75O	Pipe Replacement								13,761	1,693	15,455	6,528	1,548	3,052	4,327			
431	Non-project costs	31096701	Vintage Pipe Replacement	75	75E	Pipe Replacement								(36,550)	1,133	(35,417)	(31,621)	(719)	0	(3,078)			
432	Non-project costs	31101068	Vintage Pipe Replacement	75	75E	Pipe Replacement								142,253	(142,253)	0	14,027	0	(14,027)	0			
433	Non-project costs	31101069	Vintage Pipe Replacement	75	75E	Pipe Replacement								0	0	0	838	0	0	(838)			
434	Non-project costs	31101072	Vintage Pipe Replacement	75	75E	Pipe Replacement								81,484	(77,755)	3,729	5,119	0	(1,390)	0			
435	Non-project costs	31101073	Vintage Pipe Replacement	75	75E	Pipe Replacement								292,179	17,299	309,478	32,045	0	1,647	275,787			
436	Non-project costs	31101074	Vintage Pipe Replacement	75	75E	Pipe Replacement								84,088	(110,088)	(26,000)	2,036	0	(28,036)	0			
437	Non-project costs	31101075	Vintage Pipe Replacement	75	75E	Pipe Replacement								2,724	2,724	5,448	2,464	0	161	421			
438	Non-project costs	31101076	Vintage Pipe Replacement	75	75E	Pipe Replacement								(7,437)	(21,058)	(28,495)	2,003	0	(30,498)	0			
439	Non-project costs	31101078	Vintage Pipe Replacement	75	75E	Pipe Replacement								(4,402)	(31,955)	(36,358)	22,642	0	(58,999)	0			
440	Non-project costs	31101079	Vintage Pipe Replacement	75	75E	Pipe Replacement								20,273	(20,273)	0	2,625	0	(2,625)	0			
441	Non-project costs	31101246	Vintage Pipe Replacement	75	75E	Pipe Replacement								137,909	(136,601)	1,308	11,051	0	(10,659)	916			
442	Non-project costs	31101248	Vintage Pipe Replacement	75	75E	Pipe Replacement								538,654	(564,045)	(25,391)	25,012	0	(31,067)	(19,336)			
443	Non-project costs	31110018	Shallow Pipe	75	75M	Pipe Replacement								693	118	811	579	0	0	232			
444	Non-project costs	31122244	Pipe Rplcmnt - Oth PL Sfty Inv	75	75O	Pipe Replacement								9,503	5,755	15,258	7,049	0	5,730	2,479			
445	Non-project costs	31123904	Pipe Rplcmnt - Oth PL Sfty Inv	75	75O	Pipe Replacement								365,559	34,758	400,317	96,054	6,994	109,999	187,270			
446	Non-project costs	31132059	Pipe Rplcmnt - Oth PL Sfty Inv	75	75O	Pipe Replacement								485,941	2,479	488,420	84,382	0	382,569	21,469			
447	Non-project costs	31133320	Pipe Rplcmnt - Oth PL Sfty Inv	75	75O	Pipe Replacement								96,979	12,089	109,067	76,551	1,651	39,102	(8,238)			
448	Non-project costs	31133769	Pipe Replacement Class Locn	75	75H	Pipe Replacement								287	(287)	0	239	0	0	(239)			
449	Non-project costs	31133771	Vintage Pipe Replacement	75	75E	Pipe Replacement								142,723	(139,923)	2,800	6,221	0	(3,421)	0			
450	Non-project costs	31140169	Vintage Pipe Replacement	75	75E	Pipe Replacement								(5)	5	0	(718)	0	0	718			
451	Non-project costs	31142923	Pipe Rplcmnt - Oth PL Sfty Inv	75	75O	Pipe Replacement								195,795	481	196,276	132,459	25,393	19,669	18,756			
452	Non-project costs	31143750	Shallow Pipe	75	75M	Pipe Replacement								14,894	2,570	17,464	13,939	0	1,670	1,855			
453	Non-project costs	31148992	Pipe Rplcmnt - Oth PL Sfty Inv	75	75O	Pipe Replacement								(1,112,483)	1,192,011	79,528	21,223	1,747	54,461	2,097			
454	Non-project costs	31149843	Pipe Rplcmnt - Oth PL Sfty Inv	75	75O	Pipe Replacement								175,281	16,485	191,765	130,032	2,029	42,733	16,972			
455	Non-project costs	31149855	Pipe Rplcmnt - Oth PL Sfty Inv	75	75O	Pipe Replacement								131,740	1,782	133,522	75,549	28,485	19,165	10,324			
456	Non-project costs	31153107	Vintage Pipe Replacement	75	75E	Pipe Replacement								0	0	0	1,028	0	0	(1,028)			
457	Non-project costs	31154086	Pipe Rplcmnt - Oth PL Sfty Inv	75	75O	Pipe Replacement								145,557	20,422	165,979	100,340	2,712	45,355	17,572			
458	Non-project costs	31160704	Pipe Rplcmnt - Oth PL Sfty Inv	75	75O	Pipe Replacement								317,554	4,945	322,500	127,839	3,813	166,621	24,226			
459	Non-project costs	31169471	Pipe Replacement Class Locn	75	75H	Pipe Replacement								60,775	(60,775)	0	1,600	0	(1,600)	0			
460	Non-project costs	31173747	Pipe Rplcmnt - Oth PL Sfty Inv	75	75O	Pipe Replacement								164,311	9,853	174,164	133,059	7,455	3,407	30,242			
461	Non-project costs	31179844	Shallow Pipe	75	75M	Pipe Replacement								1,424	(1,424)	0	0	0	0	0			
462	Non-project costs	31194983	Pipe Rplcmnt - Oth PL Sfty Inv	75	75O	Pipe Replacement								273,071	(273,038)	33	197,657	32,270	31,886	(26,779)			
463	Non-project costs	31195478	Vintage Pipe Replacement	75	75E	Pipe Replacement								6,127	(11,127)	(5,000)	0	0	0	(5,000)			
464	Non-project costs	31199936	Pipe Rplcmnt - Oth PL Sfty Inv	75	75O	Pipe Replacement								931,458	196,545	1,128,002	479,365	150,311	316,476	181,851			
465	Non-project costs	31207010	Pipe Rplcmnt - Oth PL Sfty Inv	75	75O	Pipe Replacement				</													

**TRANSMISSION PIPELINE PROJECT SUMMARIES  
(CONTINUED)**

Line No	Construction Phase	Order Number	Program Description	SAP MWC	SAP MAT <sup>M</sup>	Project Description	Project Name	City	Construction Contractor	Mobilization Date	CNG/LNG	Tie-In Date/Event	Job Estimate Amount	Total Cost 2015 Actuals Full Year	Total Cost 2016 Actual YTD	Grand Total (2015 + 2016)	Labor Cost	Materials Cost	Contracts Cost	Other Cost	Variance to Budget (JE-Total Inception to Date for Completed Projects)	Total Costs Inception to Date for Completed Projects	
476	Non-project costs	7400066	Pipe Replacement Class Locn	75	75H	Pipe Replacement								0	7,714	7,714	5,288	0	0	0	2,426	2,426	
477	Non-project costs	74004067	Vintage Pipe Replacement	75	75E	Pipe Replacement								0	0	0	38,085	0	20,537	0	(18,623)	0	
478	Non-project costs	74004070	Vintage Pipe Replacement	75	75E	Pipe Replacement								0	22,210	22,210	16,284	0	2,625	3,301	0	0	
479	Non-project costs	74005920	Pipe Rplcmnt - Oth PL Sfty Inv	75	75O	Pipe Replacement								0	81,630	81,630	21,568	600	7,464	51,998	0	0	
480	Non-project costs	74007382	Vintage Pipe Replacement	75	75E	Pipe Replacement								0	856	856	249	0	0	607	0	0	
481	Non-project costs	74007850	Pipe Rplcmnt - Oth PL Sfty Inv	75	75O	Pipe Replacement								0	205	205	60	0	0	146	0	0	
482	Non-project costs	1009888	II Upgrades	98	98C	In-Line Inspection								(580,689)	0	(580,689)	(577,146)	0	0	0	0	(3,544)	0
483	Non-project costs	7057430	II Upgrades	98	98C	In-Line Inspection								3,285	0	3,285	195	0	1,428	1,662	0	0	
484	Non-project costs	7058509	II Upgrades	98	98C	In-Line Inspection								0	0	0	0	0	0	0	0	0	
485	Non-project costs	30603914	II Upgrades	98	98C	In-Line Inspection								159,535	0	159,535	15,398	10,446	22,485	111,207	0	0	
486	Non-project costs	30604421	II Upgrades	98	98C	In-Line Inspection								34,745	0	34,745	28,930	0	5,238	577	0	0	
487	Non-project costs	30836558	II Upgrades	98	98C	In-Line Inspection								806	0	806	133	0	0	672	0	0	
488	Non-project costs	30892214	II Upgrades	98	98C	In-Line Inspection								618	0	618	551	0	0	68	0	0	
489	Non-project costs	30917306	II Upgrades	98	98C	In-Line Inspection								(4,885)	0	(4,885)	0	0	0	0	0	(4,885)	0
490	Non-project costs	30940456	II Upgrades	98	98C	In-Line Inspection								1,434	0	1,434	233	0	146	1,055	0	0	
491	Non-project costs	30952180	II Upgrades	98	98C	In-Line Inspection								56,557	0	56,557	524	8,827	3,462	43,745	0	0	
492	Non-project costs	30954182	II Upgrades	98	98C	In-Line Inspection								265	0	265	253	0	0	12	0	0	
493	Non-project costs	30962285	II Upgrades	98	98C	In-Line Inspection								3,592	0	3,592	0	3,592	0	0	0	0	
494	Non-project costs	30968089	II Upgrades	98	98C	In-Line Inspection								5,614	0	5,614	399	1,500	2,197	1,518	0	0	
495	Non-project costs	30976951	II Upgrades	98	98C	In-Line Inspection								(284)	0	(284)	0	0	0	0	0	(284)	0
496	Non-project costs	30999331	II Upgrades	98	98C	In-Line Inspection								0	0	0	0	0	0	0	0	0	
497	Non-project costs	31040490	II Upgrades	98	98C	In-Line Inspection								(159)	0	(159)	0	0	0	0	0	(159)	0
498	Non-project costs	31042552	II Upgrades	98	98C	In-Line Inspection								(319)	0	(319)	0	0	0	0	0	(319)	0
499	Non-project costs	31042553	II Upgrades	98	98C	In-Line Inspection								(159)	0	(159)	0	0	0	0	0	(159)	0
500	Non-project costs	31086287	II Upgrades	98	98C	In-Line Inspection								(1,575)	0	(1,575)	0	0	0	0	0	(1,575)	0
501	Non-project costs	31137412	II Upgrades	98	98C	In-Line Inspection								0	0	0	2,640	0	0	0	0	0	
502	Non-project costs	74003063	II Upgrades	98	98C	In-Line Inspection								0	0	0	2,640	0	0	0	0	(2,640)	0
503	Non-project costs	30677903	II Upgrades	98	98C	In-Line Inspection								6,293,964	186,071	35,282	221,352	50,511	27,588	114,328	28,925	0	
504	Non-project costs	30994767	II Upgrades	98	98C	In-Line Inspection								67,233	286	2,658	2,945	846	0	2,075	24	0	
505	Non-project costs	7046013	II Upgrades	98	98C	In-Line Inspection								26,460	9,627	36,087	20,631	0	14,736	720	0	0	
506	Non-project costs	7053709	II Upgrades	98	98C	In-Line Inspection								0	5,822	5,822	1,068	0	4,754	0	0	0	
507	Non-project costs	30603910	II Upgrades	98	98C	In-Line Inspection								25,426	125,348	150,574	12,979	133,004	4,590	0	0	0	
508	Non-project costs	30603912	II Upgrades	98	98C	In-Line Inspection								9,143	10,434	19,577	7,528	0	11,210	840	0	0	
509	Non-project costs	30603913	II Upgrades	98	98C	In-Line Inspection								29,341	6,189	35,530	19,603	0	12,446	3,481	0	0	
510	Non-project costs	30603915	II Upgrades	98	98C	In-Line Inspection								43,933	17,952	61,886	28,610	12,884	15,008	5,383	0	0	
511	Non-project costs	30603916	II Upgrades	98	98C	In-Line Inspection								67,890	34,955	102,844	31,792	13,954	52,283	4,815	0	0	
512	Non-project costs	30603919	II Upgrades	98	98C	In-Line Inspection								8,974	5,473	14,447	5,200	0	7,382	1,865	0	0	
513	Non-project costs	30603920	II Upgrades	98	98C	In-Line Inspection								1,230	12,878	14,108	2,469	0	11,396	243	0	0	
514	Non-project costs	30603922	II Upgrades	98	98C	In-Line Inspection								85	42,247	42,332	7,125	0	35,208	0	0	0	
515	Non-project costs	30603923	II Upgrades	98	98C	In-Line Inspection								417	2,118	2,535	884	0	1,615	35	0	0	
516	Non-project costs	30610007	II Upgrades	98	98C	In-Line Inspection								192	5,541	5,733	621	0	5,112	0	0	0	
517	Non-project costs	30674128	II Upgrades	98	98C	In-Line Inspection								16,367	2,554	18,921	11,291	0	6,020	1,610	0	0	
518	Non-project costs	30886414	II Upgrades	98	98C	In-Line Inspection								17,306	13,713	31,019	0	0	0	31,019	0	0	
519	Non-project costs	30902971	II Upgrades	98	98C	In-Line Inspection								13	(151)	(151)	0	0	0	0	0	(155)	0
520	Non-project costs	30902972	II Upgrades	98	98C	In-Line Inspection								11	(146)	(155)	0	0	0	0	0	(135)	0
521	Non-project costs	30902974	II Upgrades	98	98C	In-Line Inspection								13	(167)	(135)	0	0	0	0	0	(155)	0
522	Non-project costs	30906073	II Upgrades	98	98C	In-Line Inspection								2,747	10,915	13,662	2,804	0	10,287	571	0	0	
523	Non-project costs	30913665	II Upgrades	98	98C	In-Line Inspection								81,415	(140,893)	(59,478)	8,708	0	4,340	(72,525)	0	0	
524	Non-project costs	30928866	II Upgrades	98	98C	In-Line Inspection								8,266	11,277	19,543	4,918	0	2,846	3,513	0	0	
525	Non-project costs	30934444	II Upgrades	98	98C	In-Line Inspection								0	2,243	2,243	459	0	1,784	0	0	0	
526	Non-project costs	30949583	II Upgrades	98	98C	In-Line Inspection								3,768	12,423	16,191	1,245	2,846	12,078	23	0	0	
527	Non-project costs	30963860	II Upgrades	98	98C	In-Line Inspection								12	9	21	0	0	0	21	0	0	
528	Non-project costs	30963862	II Upgrades	98	98C	In-Line Inspection								6,179	4,758	10,937	157	0	0	10,780	0	0	
529	Non-project costs	31012345	II Upgrades	98	98C	In-Line Inspection								14,003	11,789	25,792	5,967	0	8,945	10,880	0	0	
530	Non-project costs	31018615	II Upgrades	98	98C	In-Line Inspection								39,353	70,530	109,883	0	0	0	70,530	0	0	
531	Non-project costs	31040216	II Upgrades	98	98C	In-Line Inspection								(152,261)	(2,322)	(154,593)	(128,674)	0	(11,279)	(14,640)	0	0	
532	Non-project costs	31042551	II Upgrades	98	98C	In-Line Inspection								13	(172)	(159)	0	0	0	0	0	(159)	0
533	Non-project costs	31042555	II Upgrades	98	98C	In-Line Inspection								14,650	(57,384)	(42,734)	12,190	0	0	0	0	(54,924)	0
534	Non-project costs	31042558	II Upgrades	98	98C	In-Line Inspection								13	10	23	0	0	0	23	0	0	
535	Non-project costs	31042559	II Upgrades	98	98C	In-Line Inspection								13	10	23	0	0	0	23	0	0	
536	Non-project costs	31092165	II Upgrades	98	98C	In-Line Inspection								191,468	(399,349)	(207,881)	(111,865)	(15,873)	0	(80,043)	0	0	
537	Non-project costs	31086472	II Upgrades	98	98C	In-Line Inspection								(35,953)	16,161	(19,791)	(1,068)	0	(18,747)	0	0	0	
538	Non-project costs	31086473	II Upgrades	98	98C	In-Line Inspection								(10,224)	4,909	(5,315)	(7,018)	0	2,524	(821)	0	0	
539	Non-project costs	31087563	II Upgrades	98	98C	In-Line Inspection								25,598	3,784	29,381	1,858	0	8,426	19,097	0	0	
540	Non-project costs	31087564	II Upgrades	98	98C	In-Line Inspection								4,419	888	5,306	2,962	0	0	2,345	0	0	
541	Non-project costs	31100862	II Upgrades	98	98C	In-Line Inspection								581	34	616	499	0	0	117	0	0	
542	Non-project costs	31100865	II Upgrades	98	98C	In-Line Inspection								345,495	35,416	378,911	27,602	317,420	0	33,889	0	0	
543	Non-project costs	31101388	II Upgrades	98	98C	In-Line Inspection								14,319	(14,319)	0	2,077	0	0	0	0	(2,077)	0
544	Non-project costs	31101686	II Upgrades	98	98C	In-Line Inspection								7,987	1,194	9,181	7,763	0	173	1,245	0	0	
545	Non-project costs	31101688	II Upgrades	98	98C	In-Line Inspection								11,608	3,623	15,231	11,710	0	0	3,521	0	0	
546	Non-project costs	31101689	II Upgrades	98	98C	In-Line Inspection								12,341	1,085	13,426	11,283	0	0	2,144	0	0	
547	Non-project costs	31117575	II Upgrades	98	98C	In-Line Inspection								(14,197)	13,637	(561)	115,659	0	(121,944)	5,724	0	0	
548	Non-project costs	31113567	II Upgrades	98	98C	In-Line Inspection								6,722	7,173	13,895	5,935	0	1,238	0	0	0	
549	Non-project costs	31135668	II Upgrades	98	98C	In-Line Inspection								455	27	482	384	0					

**TRANSMISSION PIPELINE PROJECT SUMMARIES**  
**(CONTINUED)**

Line No	Construction Phase	Order Number	Program Description	SAP MWC	SAP MAT <sup>M</sup>	Project Description	Project Name	City	Construction Contractor	Mobilization Date	CNG/LNG	Tie-in Date/EDRO	Job Estimate Amount	Total Cost 2015 Actuals Full Year	Total Cost 2016 Actual YTD	Grand Total (2015 + 2016)	Labor Cost	Materials Cost	Contracts Cost	Other Cost	Variance to Budget (IE-Total Cost Inception to Date for Completed Projects)	Total Costs Inception to Date for Completed Projects	
558	Non-project costs	31135740	IU Upgrades	98	98C	In-Line Inspection								(334)	1,133	799		0	0	799			
559	Non-project costs	31135743	IU Upgrades	98	98C	In-Line Inspection								2,439	5,350	7,589	3,726		0	0	3,863		
560	Non-project costs	31135744	IU Upgrades	98	98C	In-Line Inspection								(689)	689	0	637	0	(637)	0	0		
561	Non-project costs	31135745	IU Upgrades	98	98C	In-Line Inspection								(998)	998	0	1,007	0	(1,007)	0	0		
562	Non-project costs	31135749	IU Upgrades	98	98C	In-Line Inspection								8,383	2,448	10,830	5,413	0	0	5,417			
563	Non-project costs	31135752	IU Upgrades	98	98C	In-Line Inspection								3,931	233	4,163	3,446	0	0	718			
564	Non-project costs	31135755	IU Upgrades	98	98C	In-Line Inspection								487	29	515	420	0	0	95			
565	Non-project costs	31142030	IU Upgrades	98	98C	In-Line Inspection								161	10	171	135	0	0	36			
566	Non-project costs	31142031	IU Upgrades	98	98C	In-Line Inspection								161	10	171	135	0	0	36			
567	Non-project costs	31155756	IU Upgrades	98	98C	In-Line Inspection								559	33	592	475	0	0	117			
568	Non-project costs	31164752	IU Upgrades	98	98C	In-Line Inspection								0	115	115	110	0	0	5			
569	Non-project costs	31167592	IU Upgrades	98	98C	In-Line Inspection								(203)	203	0	0	0	0	0	0		
570	Non-project costs	31167593	IU Upgrades	98	98C	In-Line Inspection								(102)	226	0	124	0	124	0	0		
571	Non-project costs	31174909	IU Upgrades	98	98C	In-Line Inspection								325	19	344	279	0	0	65			
572	Non-project costs	31183052	IU Upgrades	98	98C	In-Line Inspection								150,966	(150,966)	0	0	0	0	0	0		
573	Non-project costs	31183053	IU Upgrades	98	98C	In-Line Inspection								883	7,607	8,489	2,869	0	0	5,621			
574	Non-project costs	31186165	IU Upgrades	98	98C	In-Line Inspection								2,490	108,379	110,869	32,693	0	183	77,993			
575	Non-project costs	31202237	IU Upgrades	98	98C	In-Line Inspection								154	3,625	3,779	1,144	0	0	2,635			
576	Non-project costs	31202238	IU Upgrades	98	98C	In-Line Inspection								154	9	164	135	0	0	29			
577	Non-project costs	31204415	IU Upgrades	98	98C	In-Line Inspection								13,533	86,691	100,224	757	0	108,687	(9,219)			
578	Non-project costs	31205560	IU Upgrades	98	98C	In-Line Inspection								415	179,053	179,468	32,187	0	45,228	102,052			
579	Non-project costs	31206169	IU Upgrades	98	98C	In-Line Inspection								1,841	438,274	440,115	13,735	0	393,874	32,506			
580	Non-project costs	31228465	IU Upgrades	98	98C	In-Line Inspection								0	961	961	275	0	0	687			
581	Non-project costs	31235306	IU Upgrades	98	98C	In-Line Inspection								0	793	793	224	0	0	568			
582	Non-project costs	74000274	IU Upgrades	98	98C	In-Line Inspection								5,516	11,744	17,261	6,432	0	10,829				
583	Non-project costs	74002265	IU Upgrades	98	98C	In-Line Inspection								0	8,740	8,740	779	0	6,004	1,957			
584	Non-project costs	74002521	IU Upgrades	98	98C	In-Line Inspection								0	5,179,843	5,179,843	697,107	454,216	3,095,152	933,368			
585	Non-project costs	74003060	IU Upgrades	98	98C	In-Line Inspection								0	2	2	0	0	0	2			
586	Non-project costs	74003061	IU Upgrades	98	98C	In-Line Inspection								0	0	0	11,151	0	18,037	(29,187)			
587	Non-project costs	74003062	IU Upgrades	98	98C	In-Line Inspection								0	(300)	(300)	25,000	0	20,030	(45,330)			
588	Non-project costs	74003064	IU Upgrades	98	98C	In-Line Inspection								0	0	0	11,347	0	8,167	(19,514)			
589	Non-project costs	74003121	IU Upgrades	98	98C	In-Line Inspection								0	11	11	0	0	11				
590	Non-project costs	74003580	IU Upgrades	98	98C	In-Line Inspection								0	2,984	2,984	794	144	0	2,046			
591	Non-project costs	74003700	IU Upgrades	98	98C	In-Line Inspection								0	185,321	185,321	0	155,496	0	29,825			
592	Non-project costs	74004200	IU Upgrades	98	98C	In-Line Inspection								0	113,135	113,135	22,085	0	75,805	15,245			
593	Non-project costs	74007243	IU Upgrades	98	98C	In-Line Inspection								0	162	162	48	0	0	114			
594	Non-project costs	74007322	IU Upgrades	98	98C	In-Line Inspection								0	162	162	48	0	0	114			
595	Non-project costs	74008020	IU Upgrades	98	98C	In-Line Inspection								0	375,000	375,000	0	0	0	375,000			
596	Non-project costs	2033707	Casing Mitigation	HP	HPG	TIMP Projects								0	0	0	45,270	0	0	(45,270)			
597	Non-project costs	41449657	Traditional IU Runs	HP	HPB	TIMP Projects								3,359	0	3,359	(84)	3,443	0	0			
598	Non-project costs	41449658	Traditional IU Runs	HP	HPB	TIMP Projects								1,239	0	1,239	526	0	146	567			
599	Non-project costs	41449659	Traditional IU Runs	HP	HPB	TIMP Projects								1,847	0	1,847	964	0	0	882			
600	Non-project costs	41449672	IU Direct Exam and Repair	HP	HPB	TIMP Projects								0	157	0	157	0	0	0			
601	Non-project costs	41449673	IU Direct Exam and Repair	HP	HPB	TIMP Projects								10,545	0	10,545	362	4,102	5,198	883			
602	Non-project costs	41616088	IU Direct Exam and Repair	HP	HPB	TIMP Projects								3,919	0	3,919	(139)	5,655	(290)	(1,308)			
603	Non-project costs	41642655	Casing Mitigation	HP	HPG	TIMP Projects								0	0	0	76	0	0	(76)			
604	Non-project costs	41656106	IU Direct Exam and Repair	HP	HPB	TIMP Projects								0	479	0	479	489	0	0	(10)		
605	Non-project costs	41668200	IU Direct Exam and Repair	HP	HPB	TIMP Projects								3,195	0	3,195	1,234	1,987	0	(26)			
606	Non-project costs	41682234	Casing Mitigation	HP	HPG	TIMP Projects								0	0	0	12,617	0	53	(13,155)			
607	Non-project costs	41908117	Casing Mitigation	HP	HPG	TIMP Projects								607	0	607	0	0	11,126	(11,126)			
608	Non-project costs	42057696	Casing Mitigation	HP	HPG	TIMP Projects								0	0	0	108	0	0	(108)			
609	Non-project costs	42098043	Casing Mitigation	HP	HPG	TIMP Projects								0	0	0	241	0	(35,641)	35,400			
610	Non-project costs	42098045	Casing Mitigation	HP	HPG	TIMP Projects								0	0	0	(18,299)	0	(620,665)	638,963			
611	Non-project costs	42098048	Casing Mitigation	HP	HPG	TIMP Projects								0	0	0	44	0	7,580	(7,623)			
612	Non-project costs	42098515	Casing Mitigation	HP	HPG	TIMP Projects								0	0	0	560	0	0	(1,560)			
613	Non-project costs	42098516	Casing Mitigation	HP	HPG	TIMP Projects								0	0	0	15,630	60	0	(15,690)			
614	Non-project costs	42101761	Casing Mitigation	HP	HPG	TIMP Projects								0	0	0	0	0	15,202	(15,202)			
615	Non-project costs	42109430	Traditional IU Runs	HP	HPB	TIMP Projects								315,197	0	315,197	6,497	0	315,000	(6,300)			
616	Non-project costs	42114770	Casing Mitigation	HP	HPG	TIMP Projects								0	0	0	63,627	0	1,228	(64,855)			
617	Non-project costs	42125230	Casing Mitigation	HP	HPG	TIMP Projects								0	0	0	0	0	0	0			
618	Non-project costs	42125231	Casing Mitigation	HP	HPG	TIMP Projects								0	0	0	6,715	0	(57,109)	50,393			
619	Non-project costs	42125232	Casing Mitigation	HP	HPG	TIMP Projects								0	0	0	0	0	455	(455)			
620	Non-project costs	42125482	Casing Mitigation	HP	HPG	TIMP Projects								0	0	0	14,331	0	96,463	(110,794)			
621	Non-project costs	42128238	Hydrostatic Testing - IM	HP	HPF	TIMP Projects								1,170	0	1,170	1,170	0	0	0			
622	Non-project costs	42141036	Casing Mitigation	HP	HPG	TIMP Projects								0	0	0	3,421	0	(25,784)	22,362			
623	Non-project costs	42157840	Casing Mitigation	HP	HPG	TIMP Projects								0	0	0	11,102	0	0	(11,102)			
624	Non-project costs	42165783	Hydrostatic Testing - IM	HP	HPF	TIMP Projects								1,190	0	1,190	1,190	0	0	0			
625	Non-project costs	42165785	Hydrostatic Testing - IM	HP	HPF	TIMP Projects								1,687	0	1,687	1,687	0	0	0			
626	Non-project costs	42165787	Hydrostatic Testing - IM	HP	HPF	TIMP Projects								1,190	0	1,190	1,190	0	0	0			
627	Non-project costs	42165788	Hydrostatic Testing - IM	HP	HPF	TIMP Projects								4,374	0	4,374	564	0	5,750	(1,940)			
628	Non-project costs	42189567	Traditional IU Runs	HP	HPB	TIMP Projects								191	0	191	191	0	0	0			
629	Non-project costs	42199979	Casing Mitigation	HP	HPG	TIMP Projects								0	0	0	108	0	0	(108)			
630	Non-project costs	42199985	Casing Mitigation	HP	HPG	TIMP Projects								0	0	0	71	0	180	(251)			
631	Non-project costs	42200192	Casing Mitigation	HP	HPG	TIMP Projects								0	0	0	1,516	0	3,187	(4,702)			
632	Non-project costs	42200268	Casing Mitigation	HP	HPG	TIMP Projects								0	0	0	35,898	0	194,524	(230,423)			
633	Non-project costs	42200273	Casing Mitigation	HP	HPG	TIMP Projects								0	0	0	2,938	0	0	(2,938)			
634	Non-project costs	42200277	Casing Mitigation	HP	HPG	TIMP Projects								0	0	0	48,604	4,607	130,044	(183,254)			
635	Non-project costs	42200284	Casing Mitigation	HP	HPG	TIMP Projects								0	0	0	20,893	0	2,015	(22,908)			
636	Non-project costs	42200286	Casing Mitigation	HP	HPG	TIMP Projects								160	0	160	4,617	0	480	(4,937)			
637	Non-project																						



TABLE 11-1<sup>(a)</sup>  
TRANSMISSION PIPELINE PROJECT SUMMARIES  
(CONTINUED)

Line No	Construction Phase	Order Number	Program Description	SAP MWC	SAP MA <sup>(b)</sup>	Project Description	Project Name	City	Construction Contractor	Mobilization Date	CNG/LNG	Tie-in Date/EDRO	Job Estimate Amount	Total Cost 2015 Actuals Full Year	Total Cost 2016 Actual YTD	Grand Total (2015 + 2016)	Labor Cost	Materials Cost	Contracts Cost	Other Cost	Variance to Budget (IE-Total Cost Inception to Date for Completed Projects)	Total Costs Inception to Date for Completed Projects
640	Non-project costs	42202405	Casing Mitigation	HP	HPG	TIMP Projects								0	0	0	8,724	0	3,007	(11,731)		
641	Non-project costs	42202580	Casing Mitigation	HP	HPG	TIMP Projects								0	0	0	26,365	0	158,219	(184,584)		
642	Non-project costs	42202949	Casing Mitigation	HP	HPG	TIMP Projects								0	0	0	10,206	0	90	(10,296)		
643	Non-project costs	42202951	Casing Mitigation	HP	HPG	TIMP Projects								0	0	0	4,314	0	594	(4,907)		
644	Non-project costs	42202956	Casing Mitigation	HP	HPG	TIMP Projects								0	0	0	7,919	0	3,432	(11,350)		
645	Non-project costs	42216958	Casing Mitigation	HP	HPG	TIMP Projects								0	0	0	4,136	0	4,620	(8,756)		
646	Non-project costs	42217436	Casing Mitigation	HP	HPG	TIMP Projects								0	0	0	27,345	0	9,006	(36,351)		
647	Non-project costs	42217437	Casing Mitigation	HP	HPG	TIMP Projects								0	0	0	23,846	0	30	(23,876)		
648	Non-project costs	42217438	Casing Mitigation	HP	HPG	TIMP Projects								0	0	0	29,587	0	0	(29,587)		
649	Non-project costs	42217439	Casing Mitigation	HP	HPG	TIMP Projects								0	0	0	4,515	0	0	(4,515)		
650	Non-project costs	42218800	Casing Mitigation	HP	HPG	TIMP Projects								0	0	0	2,888	0	0	(2,888)		
651	Non-project costs	42218801	Casing Mitigation	HP	HPG	TIMP Projects								0	0	0	12,327	0	511	(12,838)		
652	Non-project costs	42219157	Casing Mitigation	HP	HPG	TIMP Projects								0	0	0	20,636	0	60	(20,696)		
653	Non-project costs	42219159	Casing Mitigation	HP	HPG	TIMP Projects								0	0	0	43,631	0	2,233	(45,864)		
654	Non-project costs	42219280	Casing Mitigation	HP	HPG	TIMP Projects								0	0	0	15,585	0	6,461	(22,046)		
655	Non-project costs	42222155	Casing Mitigation	HP	HPG	TIMP Projects								0	0	0	17,326	0	1,840	(19,166)		
656	Non-project costs	42222156	Casing Mitigation	HP	HPG	TIMP Projects								0	0	0	27,380	0	30	(27,410)		
657	Non-project costs	42222628	Casing Mitigation	HP	HPG	TIMP Projects								0	0	0	2,996	0	0	(2,996)		
658	Non-project costs	42222635	Casing Mitigation	HP	HPG	TIMP Projects								0	0	0	17,828	0	281	(18,108)		
659	Non-project costs	42222636	Casing Mitigation	HP	HPG	TIMP Projects								0	0	0	13,461	0	450	(13,911)		
660	Non-project costs	42222638	Casing Mitigation	HP	HPG	TIMP Projects								0	0	0	11,478	0	210	(11,688)		
661	Non-project costs	42222640	Casing Mitigation	HP	HPG	TIMP Projects								0	0	0	5,101	0	0	(5,101)		
662	Non-project costs	42222642	Casing Mitigation	HP	HPG	TIMP Projects								0	0	0	190,298	2,230	127,773	(320,301)		
663	Non-project costs	42222643	Casing Mitigation	HP	HPG	TIMP Projects								0	0	0	22,724	0	0	(22,724)		
664	Non-project costs	42222644	Casing Mitigation	HP	HPG	TIMP Projects								0	0	0	12,433	0	5,085	(17,517)		
665	Non-project costs	42222646	Casing Mitigation	HP	HPG	TIMP Projects								0	0	0	7,218	0	0	(7,218)		
666	Non-project costs	42224608	Casing Mitigation	HP	HPG	TIMP Projects								0	0	0	15,027	0	1,280	(16,307)		
667	Non-project costs	42224613	Casing Mitigation	HP	HPG	TIMP Projects								0	0	0	50,457	33	0	(50,490)		
668	Non-project costs	42224614	Casing Mitigation	HP	HPG	TIMP Projects								0	0	0	1,464	0	0	(1,464)		
669	Non-project costs	42224615	Casing Mitigation	HP	HPG	TIMP Projects								0	0	0	846	0	160	(1,006)		
670	Non-project costs	42224617	Casing Mitigation	HP	HPG	TIMP Projects								0	0	0	14,384	393	0	(14,777)		
671	Non-project costs	42224618	Casing Mitigation	HP	HPG	TIMP Projects								0	0	0	22,541	0	3,703	(26,244)		
672	Non-project costs	42268649	Casing Mitigation	HP	HPG	TIMP Projects								0	0	0	24,913	400	5,374	(30,687)		
673	Non-project costs	42284780	Casing Mitigation	HP	HPG	TIMP Projects								0	0	0	26,734	0	920	(27,654)		
674	Non-project costs	42293082	Casing Mitigation	HP	HPG	TIMP Projects								0	0	0	6,266	0	879	(7,145)		
675	Non-project costs	42302043	Casing Mitigation	HP	HPG	TIMP Projects								0	0	0	1,019	0	0	(1,019)		
676	Non-project costs	42302048	Casing Mitigation	HP	HPG	TIMP Projects								0	0	0	28,013	0	221,669	(249,683)		
677	Non-project costs	42302588	Casing Mitigation	HPG	HPG	TIMP Projects								0	0	0	16,138	0	174,098	(190,236)		
678	Non-project costs	42322713	Hydrostatic Testing - IM	HP	HPF	TIMP Projects								29,709	0	29,709	23,575	0	6,134	0		
679	Non-project costs	42348979	Casing Mitigation	HPG	HPG	TIMP Projects								0	0	0	5,389	0	2,733	(8,122)		
680	Non-project costs	42356527	Casing Mitigation	HP	HPG	TIMP Projects								0	0	0	4,882	0	18	(4,900)		
681	Non-project costs	42360106	Hydrostatic Testing - IM	HP	HPF	TIMP Projects								82	0	82	82	0	0	0		
682	Non-project costs	42413396	Hydrostatic Testing - IM	HP	HPF	TIMP Projects								2,095	0	2,095	715	0	0	1,380		
683	Non-project costs	42414058	Hydrostatic Testing - IM	HP	HPF	TIMP Projects								5,560	0	5,560	81	0	0	5,579		
684	Non-project costs	42414128	Hydrostatic Testing - IM	HP	HPF	TIMP Projects								4,732	0	4,732	173	0	0	4,559		
685	Non-project costs	42453804	Traditional LI Runs	HP	HPB	TIMP Projects								2,089	0	2,089	2,089	0	0	0		
686	Non-project costs	42458453	Hydrostatic Testing - IM	HP	HPF	TIMP Projects								3,880	0	3,880	3,880	0	0	0		
687	Non-project costs	42189568	Traditional LI Runs	HP	HPB	TIMP Projects								5,805,434	3,098,467	545,878	3,644,345	928,661	1,757,660	249,563		
688	Non-project costs	84000981	Hydrostatic Testing - IM	HP	HPF	TIMP Projects								395,162	0	492	492	8,363	0	(8,329)	458	
689	Non-project costs	2033708	LI Direct Exam and Repair	HP	HPI	TIMP Projects								414,435	6,004	420,438	450,991	0	(51,200)	648		
690	Non-project costs	2036925	Hydrostatic Testing - IM	HP	HPF	TIMP Projects								108,230	46,756	154,986	0	0	0	154,986		
691	Non-project costs	8159882	Traditional LI Runs	HP	HPB	TIMP Projects								116,370	42,734	159,105	108,779	0	51,560	(1,234)		
692	Non-project costs	8167925	Hydrostatic Testing - IM	HP	HPF	TIMP Projects								(19,613,682)	(42,673,984)	(62,287,666)	(5,938,718)	(618,913)	(29,863,730)	(25,866,305)		
693	Non-project costs	41449517	LI Direct Exam and Repair	HP	HPI	TIMP Projects								1,578	7,201	8,778	3,430	0	5,348	0		
694	Non-project costs	41449670	Traditional LI Runs	HP	HPB	TIMP Projects								43,606	160,359	203,965	43,830	0	158,476	1,659		
695	Non-project costs	41449671	LI Direct Exam and Repair	HP	HPI	TIMP Projects								3,112	2,424	5,536	570	0	2,441	2,524		
696	Non-project costs	41504825	LI Direct Exam and Repair	HP	HPI	TIMP Projects								16,942	(3,483)	13,458	8,621	1,516	3,322	0		
697	Non-project costs	41534743	LI Direct Exam and Repair	HP	HPI	TIMP Projects								340	2,433	2,773	564	0	1,974	235		
698	Non-project costs	41596255	LI Direct Exam and Repair	HP	HPI	TIMP Projects								33,158	191	33,349	7,626	20,741	0	4,981		
699	Non-project costs	41599709	Casing Mitigation	HP	HPG	TIMP Projects								0	340	340	16,905	0	0	(16,565)		
700	Non-project costs	41616090	LI Direct Exam and Repair	HP	HPI	TIMP Projects								4,093	3,780	7,874	372	0	7,482	20		
701	Non-project costs	41719579	Traditional LI Runs	HP	HPB	TIMP Projects								15,096	7,009	22,106	6,368	0	15,133	604		
702	Non-project costs	41991620	Casing Mitigation	HP	HPG	TIMP Projects								1,806	4,032	5,838	859	0	4,890	89		
703	Non-project costs	42153943	Casing Mitigation	HP	HPG	TIMP Projects								0	(2,605)	(2,605)	327,754	150	2,601	(333,111)		
704	Non-project costs	42165786	Hydrostatic Testing - IM	HP	HPF	TIMP Projects								2,113	0	2,113	1,909	0	204	0		
705	Non-project costs	42169520	Hydrostatic Testing - IM	HP	HPF	TIMP Projects								850	652	1,503	1,298	0	0	205		
706	Non-project costs	42196435	Traditional LI Runs	HP	HPB	TIMP Projects								7,594	25,594	33,188	10,831	0	22,357	0		
707	Non-project costs	42201539	Casing Mitigation	HP	HPG	TIMP Projects								0	130	130	21,880	0	1,040	(22,789)		
708	Non-project costs	42216957	Casing Mitigation	HP	HPG	TIMP Projects								0	188	188	53,405	1,360	49,084	(105,605)		
709	Non-project costs	42219158	Casing Mitigation	HP	HPG	TIMP Projects								(7)	2,175	2,168	29,427	818	3,287	(31,364)		
710	Non-project costs	42222639	Casing Mitigation	HP	HPG	TIMP Projects								0	696	696	9,331	0	0	(8,635)		
711	Non-project costs	42224616	Casing Mitigation	HP	HPG	TIMP Projects								0	(13,526)	(13,526)	63,418	0	60	(77,004)		
712	Non-project costs	42322774	Casing Mitigation	HP	HPG	TIMP Projects								0	(308)	(308)	217,357	3,189	59,136	(279,991)		
713	Non-project costs	42329397	Hydrostatic Testing - IM	HP	HPF	TIMP Projects								1,190,607	(1,208,700)	(18,093)	281,552	0	(307,402)	7,757		
714	Non-project costs	42368676	Hydrostatic Testing - IM	HP	HPF	TIMP Projects								420,642	(389,079)	31,573	20,192	0	11,318	63		
715	Non-project costs	42376888	Traditional LI Runs	HP	HPB	TIMP Projects								606,470	40,083	646,554	182,646	0	456,790	7,118		
716	Non-project costs	42389987	LI Direct Exam and Repair	HP	HPI	TIMP Projects								43,125	0	43,125	19,874	21,348	0	1,903		
717	Non-project costs	42414073	Hydrostatic Testing - IM	HP	HPF	TIMP Projects								28,561	602	29,163	10,223	0	710	18,230		
718	Non-project costs	42414135	Hydrostatic Testing - IM	HP	HPF																	

TABLE 11-1<sup>(a)</sup>  
TRANSMISSION PIPELINE PROJECT SUMMARIES  
(CONTINUED)

Line No	Construction Phase	Order Number	Program Description	SAP MWC	SAP MA <sup>(b)</sup>	Project Description	Project Name	City	Construction Contractor	Mobilization Date	CNG/LNG	Tie-in Date/EDRO	Job Estimate Amount	Total Cost 2015 Actuals Full Year	Total Cost 2016 Actual YTD	Grand Total (2015 + 2016)	Labor Cost	Materials Cost	Contracts Cost	Other Cost	Variance to Budget (IE-Total Cost Inception to Date for Completed Projects)	Total Costs Inception to Date for Completed Projects
722	Non-project costs	42453456	Traditional LI Runs	HP	HPB	TIMP Projects								1,130	0	1,130	1,130	0	0	0	0	
723	Non-project costs	42453459	Traditional LI Runs	HP	HPB	TIMP Projects								26,083	118,892	144,976	67,031	6,351	20,170	51,424		
724	Non-project costs	42453805	Traditional LI Runs	HP	HPB	TIMP Projects								2,089	1,094	3,183	2,580	0	0	603		
725	Non-project costs	42453806	Traditional LI Runs	HP	HPB	TIMP Projects								2,089	1,083	3,172	2,575	0	0	597		
726	Non-project costs	42458451	Hydrostatic Testing - IM	HP	HPF	TIMP Projects								69,135	(8,879)	60,255	57,345	0	2,721	189		
727	Non-project costs	42480543	Hydrostatic Testing - IM	HP	HPF	TIMP Projects								(394)	467	72	12,009	0	734	(12,670)		
728	Non-project costs	42483705	Hydrostatic Testing - IM	HP	HPF	TIMP Projects								28,473	6,537	35,011	18,933	0	3,217	12,861		
729	Non-project costs	42485808	Hydrostatic Testing - IM	HP	HPF	TIMP Projects								1,396	0	1,396	173	0	0	1,223		
730	Non-project costs	42485827	Hydrostatic Testing - IM	HP	HPF	TIMP Projects								3,361,071	213,953	3,575,024	47,058	429	122,354	3,405,184		
731	Non-project costs	42569495	LI Direct Exam and Repair	HP	HPI	TIMP Projects								385	16,458	16,842	4,662	0	7,561	4,619		
732	Non-project costs	42580767	Hydrostatic Testing - IM	HP	HPF	TIMP Projects								566	(566)	0	0	0	0	0		
733	Non-project costs	42596343	LI Direct Exam and Repair	HP	HPI	TIMP Projects								0	15,787	15,787	13,536	0	240	2,010		
734	Non-project costs	42600490	LI Direct Exam and Repair	HP	HPI	TIMP Projects								0	53,948	53,948	14,748	7,417	25,411	6,372		
735	Non-project costs	42654648	Traditional LI Runs	HP	HPB	TIMP Projects								0	335,190	335,190	15,270	0	317,975	1,945		
736	Non-project costs	42654652	Traditional LI Runs	HP	HPB	TIMP Projects								0	383,012	383,012	8,618	0	376,627	(2,233)		
737	Non-project costs	42654654	Traditional LI Runs	HP	HPB	TIMP Projects								0	499	499	223	0	0	275		
738	Non-project costs	42654655	Traditional LI Runs	HP	HPB	TIMP Projects								0	123,686	123,686	796	0	124,375	(1,486)		
739	Non-project costs	42775208	Traditional LI Runs	HP	HPB	TIMP Projects								0	715,126	715,126	74,541	69,069	485,684	85,834		
740	Non-project costs	42794153	LI Direct Exam and Repair	HP	HPB	TIMP Projects								0	3,646	3,646	2,841	0	0	805		
741	Non-project costs	84000604	Hydrostatic Testing - IM	HP	HPF	TIMP Projects								96,719	18,432	115,151	10,414	0	3,199	101,537		
742	Non-project costs	84000606	Hydrostatic Testing - IM	HP	HPF	TIMP Projects								78,018	0	78,018	0	0	0	78,018		
743	Non-project costs	84000662	Hydrostatic Testing - IM	HP	HPF	TIMP Projects								0	5,444	5,444	579	243	4,678	(55)		
744	Non-project costs	84000680	Hydrostatic Testing - IM	HP	HPF	TIMP Projects								5,845	246	6,091	105	0	0	5,986		
745	Non-project costs	84000703	Traditional LI Runs	HP	HPB	TIMP Projects								0	53,301	53,301	48,780	0	0	4,521		
746	Non-project costs	84000704	Traditional LI Runs	HP	HPB	TIMP Projects								0	28	28	12	0	0	15		
747	Non-project costs	84000706	Traditional LI Runs	HP	HPB	TIMP Projects								0	3,198	3,198	2,209	0	0	989		
748	Non-project costs	84000707	Traditional LI Runs	HP	HPB	TIMP Projects								0	8,260	8,260	7,582	0	0	678		
749	Non-project costs	84000762	Hydrostatic Testing - IM	HP	HPF	TIMP Projects								0	82,785	82,785	12,064	0	67,489	3,233		
750	Non-project costs	84000772	Hydrostatic Testing - IM	HP	HPF	TIMP Projects								0	2,687	2,687	1,994	0	273	420		
751	Non-project costs	84000905	Hydrostatic Testing - IM	HP	HPF	TIMP Projects								0	66,507	66,507	21,169	0	27,891	17,447		
752	Non-project costs	84000906	Hydrostatic Testing - IM	HP	HPF	TIMP Projects								0	47,409	47,409	21,562	0	0	25,847		
753	Non-project costs	84000943	Traditional LI Runs	HP	HPB	TIMP Projects								0	665	665	631	0	0	34		
754	Non-project costs	84000982	Hydrostatic Testing - IM	HP	HPF	TIMP Projects								0	842,230	842,230	5,844	0	838,216	(1,829)		
755	Non-project costs	84001162	Hydrostatic Testing - IM	HP	HPF	TIMP Projects								0	1,165	1,165	522	0	0	643		
756	Non-project costs	84001163	Hydrostatic Testing - IM	HP	HPF	TIMP Projects								0	27,210	27,210	20,517	0	0	6,693		
757	Non-project costs	84001164	Hydrostatic Testing - IM	HP	HPF	TIMP Projects								0	27,448	27,448	19,944	0	0	7,503		
758	Non-project costs	84001244	Traditional LI Runs	HP	HPB	TIMP Projects								0	3,031	3,031	1,368	0	0	1,663		
759	Non-project costs	84001300	Traditional LI Runs	HP	HPB	TIMP Projects								0	4,310	4,310	2,127	0	0	2,183		
760	Non-project costs	84001467	Hydrostatic Testing - IM	HP	HPF	TIMP Projects								0	669	669	302	0	0	368		
761	Non-project costs	84001468	Hydrostatic Testing - IM	HP	HPF	TIMP Projects								0	337	337	151	0	0	186		
762	Non-project costs	84001522	Traditional LI Runs	HP	HPB	TIMP Projects								0	16,174	16,174	7,173	0	3,523	5,478		
763	Non-project costs	84001660	Traditional LI Runs	HP	HPB	TIMP Projects								0	32,435	32,435	18,797	0	2,659	10,979		
764	Non-project costs	84002360	Traditional LI Runs	HP	HPB	TIMP Projects								0	9,223	9,223	4,050	0	0	5,174		
765	Non-project costs	42126778	Hydrostatic Tstng D.11-06-017	JT	JTC	Strength Test								0	0	0	316,311	1,726	0	0		
766	Non-project costs	41676466	Hydrostatic Tstng D.11-06-017	JT	JTC	Strength Test								43	0	43	13	0	30	0		
767	Non-project costs	42122800	Hydrostatic Tstng D.11-06-017	JT	JTC	Strength Test								0	0	0	5,735	0	(1,178)	(4,557)		
768	Non-project costs	42122819	Hydrostatic Tstng D.11-06-017	JT	JTC	Strength Test								0	0	0	1,380	0	0	(1,380)		
769	Non-project costs	42122922	Hydrostatic Tstng D.11-06-017	JT	JTC	Strength Test								12,605	0	12,605	12,605	0	0	0		
770	Non-project costs	42122928	Hydrostatic Tstng D.11-06-017	JT	JTC	Strength Test								6	0	6	21,609	0	1,392	(22,995)		
771	Non-project costs	42124781	Hydrostatic Tstng D.11-06-017	JT	JTC	Strength Test								0	0	0	880	1,900	60,413	(63,193)		
772	Non-project costs	42124784	Hydrostatic Tstng D.11-06-017	JT	JTC	Strength Test								0	0	0	5,579	0	0	(5,579)		
773	Non-project costs	42125035	Hydrostatic Tstng D.11-06-017	JT	JTC	Strength Test								0	0	0	648	0	(1,662)	1,015		
774	Non-project costs	42125224	Hydrostatic Tstng D.11-06-017	JT	JTC	Strength Test								0	0	0	5,845	0	0	(5,845)		
775	Non-project costs	42125226	Hydrostatic Tstng D.11-06-017	JT	JTC	Strength Test								1,733	0	1,733	1,733	0	0	0		
776	Non-project costs	42125228	Hydrostatic Tstng D.11-06-017	JT	JTC	Strength Test								3,827	0	3,827	3,827	0	0	0		
777	Non-project costs	42128236	Hydrostatic Tstng D.11-06-017	JT	JTC	Strength Test								0	0	0	1,223	0	0	(1,223)		
778	Non-project costs	42128401	Hydrostatic Tstng D.11-06-017	JT	JTC	Strength Test								399	0	399	399	0	0	0		
779	Non-project costs	42128781	Hydrostatic Tstng D.11-06-017	JT	JTC	Strength Test								2,224	0	2,224	2,224	0	0	0		
780	Non-project costs	42128865	Hydrostatic Tstng D.11-06-017	JT	JTC	Strength Test								4,552	0	4,552	4,552	0	0	0		
781	Non-project costs	42165103	Hydrostatic Tstng D.11-06-017	JT	JTC	Strength Test								5,370	0	5,370	5,370	0	0	0		
782	Non-project costs	42191805	Hydrostatic Tstng D.11-06-017	JT	JTC	Strength Test								0	0	0	18,031	0	0	(18,031)		
783	Non-project costs	42192844	Hydrostatic Tstng D.11-06-017	JT	JTC	Strength Test								2,416	0	2,416	1,894	0	0	522		
784	Non-project costs	42360102	Hydrostatic Tstng D.11-06-017	JT	JTC	Strength Test								105	0	105	105	0	0	0		
785	Non-project costs	42360109	Hydrostatic Tstng D.11-06-017	JT	JTC	Strength Test								105	0	105	105	0	0	0		
786	Non-project costs	42402682	Hydrostatic Tstng D.11-06-017	JT	JTC	Strength Test								106	0	106	106	0	0	0		
787	Non-project costs	42402684	Hydrostatic Tstng D.11-06-017	JT	JTC	Strength Test								105	0	105	105	0	0	0		
788	Non-project costs	42402685	Hydrostatic Tstng D.11-06-017	JT	JTC	Strength Test								105	0	105	105	0	0	0		
789	Non-project costs	42128718	Hydrostatic Tstng D.11-06-017	JT	JTC	Strength Test								4,326	93,584	97,910	747,475	33,328	2,881,131	(3,564,024)		
790	Non-project costs	42128625	Hydrostatic Tstng D.11-06-017	JT	JTC	Strength Test								2,713,685	67	7,505	142,401	(924)	88,973	(22,977)		
791	Non-project costs	42128400	Hydrostatic Tstng D.11-06-017	JT	JTC	Strength Test								2,580,691	12,070	142,944	155,014	844,801	97,548	3,924,379	(4,711,714)	
792	Non-project costs	42322706	Hydrostatic Tstng D.11-06-017	JT	JTC	Strength Test								21	17,691	17,713	202,546	48,628	49,235	(282,696)		
793	Non-project costs	42128715	Hydrostatic Tstng D.11-06-017	JT	JTC	Strength Test								1,679	47,346	49,026	930,757	98,642	2,362,675	(3,343,047)		
794	Non-project costs	41849196	Hydrostatic Tstng D.11-06-017	JT	JTC	Strength Test								1,638	2,823	4,461	145,943	107	59,873	(201,461)		
795	Non-project costs	42128708	Hydrostatic Tstng D.11-06-017	JT	JTC	Strength Test								135	109,032	109,167	1,339,721	87,050	1,897,511	(3,215,115)		
796	Non-project costs	42128783	Hydrostatic Tstng D.11-06-017	JT	JTC	Strength Test								5,416	114,333	119,749	172,340	93,988	46,133	(192,742)		



TABLE 11-1<sup>(a)</sup>  
TRANSMISSION PIPELINE PROJECT SUMMARIES  
(CONTINUED)

Line No	Construction Phase	Order Number	Program Description	SAP MWC	SAP MA <sup>(b)</sup>	Project Description	Project Name	City	Construction Contractor	Mobilization Date	CNG/LNG	Tie-in Date/EDRO	Job Estimate Amount	Total Cost 2015 Actuals Full Year	Total Cost 2016 Actual YTD	Grand Total (2015 + 2016)	Labor Cost	Materials Cost	Contracts Cost	Other Cost	Variance to Budget (IE-Total Cost Inception to Date for Completed Projects)	Total Costs Inception to Date for Completed Projects
804	Non-project costs	8167924	Hydrostatic Tstng D.11-06-017	JT	JTC	Strength Test								2,247,118	0	2,247,118	0	0	0	2,247,118		
805	Non-project costs	8168077	Hydrostatic Tstng D.11-06-017	JT	JTC	Strength Test								(6,208,166)	(3,490,997)	(9,699,162)	(937,372)	(49,853)	(2,015,651)	(6,696,287)		
806	Non-project costs	8168078	Hydrostatic Tstng D.11-06-017	JT	JTC	Strength Test								6,208,166	3,490,997	9,699,162	937,372	49,853	2,015,651	6,696,287		
807	Non-project costs	40755125	Hydrostatic Tstng D.11-06-017	JT	JTC	Strength Test								19,462	157,926	177,388	78,793	355	45,665	52,575		
808	Non-project costs	42122574	Hydrostatic Tstng D.11-06-017	JT	JTC	Strength Test								11,259	868	12,127	940,127	55,139	800,838	(1,783,977)		
809	Non-project costs	42122806	Hydrostatic Tstng D.11-06-017	JT	JTC	Strength Test								21	3,974	3,995	129,932	0	18,131	(144,067)		
810	Non-project costs	42122808	Hydrostatic Tstng D.11-06-017	JT	JTC	Strength Test								30	(118,622)	(118,592)	(65,097)	0	(53,494)	0		
811	Non-project costs	42122924	Hydrostatic Tstng D.11-06-017	JT	JTC	Strength Test								41,609	390	42,000	41,579	0	420	0		
812	Non-project costs	42122929	Hydrostatic Tstng D.11-06-017	JT	JTC	Strength Test								0	383	383	43,438	0	627	(43,682)		
813	Non-project costs	42124486	Hydrostatic Tstng D.11-06-017	JT	JTC	Strength Test								0	724	724	27,144	0	0	(26,420)		
814	Non-project costs	42124489	Hydrostatic Tstng D.11-06-017	JT	JTC	Strength Test								5	4,099	4,104	50,365	0	2,052	(48,313)		
815	Non-project costs	42124694	Hydrostatic Tstng D.11-06-017	JT	JTC	Strength Test								39	20,978	21,017	314,255	20,130	359,092	(672,459)		
816	Non-project costs	42124697	Hydrostatic Tstng D.11-06-017	JT	JTC	Strength Test								13,126	0	13,126	1,348	0	12,018	(240)		
817	Non-project costs	42124782	Hydrostatic Tstng D.11-06-017	JT	JTC	Strength Test								1,570	0	1,570	1,570	0	0	0		
818	Non-project costs	42124785	Hydrostatic Tstng D.11-06-017	JT	JTC	Strength Test								35,848	526	36,374	36,482	0	0	(108)		
819	Non-project costs	42125030	Hydrostatic Tstng D.11-06-017	JT	JTC	Strength Test								4	10,347	10,350	118,769	0	19,533	(127,951)		
820	Non-project costs	42125034	Hydrostatic Tstng D.11-06-017	JT	JTC	Strength Test								625	23,694	24,319	147,348	0	1,806	(124,835)		
821	Non-project costs	42125038	Hydrostatic Tstng D.11-06-017	JT	JTC	Strength Test								23	80,428	80,451	83,407	45,813	(12,758)	(36,010)		
822	Non-project costs	42125220	Hydrostatic Tstng D.11-06-017	JT	JTC	Strength Test								452	20,359	20,810	80,793	0	16,481	(76,464)		
823	Non-project costs	42127801	Hydrostatic Tstng D.11-06-017	JT	JTC	Strength Test								4,234	9,956	14,191	317,087	37,186	95,465	(435,547)		
824	Non-project costs	42128230	Hydrostatic Tstng D.11-06-017	JT	JTC	Strength Test								377	783	1,159	886	0	0	274		
825	Non-project costs	42128237	Hydrostatic Tstng D.11-06-017	JT	JTC	Strength Test								3,232	0	3,232	3,232	0	0	0		
826	Non-project costs	42128239	Hydrostatic Tstng D.11-06-017	JT	JTC	Strength Test								1,190	5,717	6,908	137,801	0	19,495	(150,389)		
827	Non-project costs	42128782	Hydrostatic Tstng D.11-06-017	JT	JTC	Strength Test								163	68,942	69,104	347,797	1,563	34,707	(114,963)		
828	Non-project costs	42144218	Hydrostatic Tstng D.11-06-017	JT	JTC	Strength Test								555,094	23,797	578,891	207,708	10,699	364,207	(8,823)		
829	Non-project costs	42165102	Hydrostatic Tstng D.11-06-017	JT	JTC	Strength Test								4,184	65,459	69,642	236,692	0	117,181	(284,231)		
830	Non-project costs	42165596	Hydrostatic Tstng D.11-06-017	JT	JTC	Strength Test								7	121,016	121,023	134,263	0	(6,716)	(6,524)		
831	Non-project costs	42165681	Hydrostatic Tstng D.11-06-017	JT	JTC	Strength Test								4	43,216	43,220	75,059	0	10,668	(42,506)		
832	Non-project costs	42183782	Hydrostatic Tstng D.11-06-017	JT	JTC	Strength Test								4,815	23,774	28,589	825,359	119,443	975,911	(1,892,124)		
833	Non-project costs	42183790	Hydrostatic Tstng D.11-06-017	JT	JTC	Strength Test								19	1,138	1,157	425,440	18,622	247,112	(690,017)		
834	Non-project costs	42183796	Hydrostatic Tstng D.11-06-017	JT	JTC	Strength Test								593	65,698	593	65,698	193	12,062	(77,360)		
835	Non-project costs	42189692	Hydrostatic Tstng D.11-06-017	JT	JTC	Strength Test								13,886	0	13,924	8,498	5,413	0	13		
836	Non-project costs	42191615	Hydrostatic Tstng D.11-06-017	JT	JTC	Strength Test								3,083	232	3,315	3,234	0	0	81		
837	Non-project costs	42191784	Hydrostatic Tstng D.11-06-017	JT	JTC	Strength Test								5,688	1,287	6,975	6,921	0	0	54		
838	Non-project costs	42191808	Hydrostatic Tstng D.11-06-017	JT	JTC	Strength Test								27,444	1,239	28,683	27,942	0	659	81		
839	Non-project costs	42191809	Hydrostatic Tstng D.11-06-017	JT	JTC	Strength Test								2,949	232	3,181	3,100	0	0	81		
840	Non-project costs	42191817	Hydrostatic Tstng D.11-06-017	JT	JTC	Strength Test								68,76	85,859	68,76	85,859	0	0	81		
841	Non-project costs	42192043	Hydrostatic Tstng D.11-06-017	JT	JTC	Strength Test								10,781	1,062	11,062	10,963	0	0	98		
842	Non-project costs	42192046	Hydrostatic Tstng D.11-06-017	JT	JTC	Strength Test								6,679,135	2,461,515	9,140,650	3,473,616	390,768	5,237,065	39,201		
843	Non-project costs	42322710	Hydrostatic Tstng D.11-06-017	JT	JTC	Strength Test								399,261	16,860	416,122	220,372	29,521	162,035	4,194		
844	Non-project costs	42353793	Hydrostatic Tstng D.11-06-017	JT	JTC	Strength Test								4,773	77	4,850	4,823	0	0	27		
845	Non-project costs	42364208	Hydrostatic Tstng D.11-06-017	JT	JTC	Strength Test								6	866	872	91,894	0	5,530	(96,552)		
846	Non-project costs	42389373	Hydrostatic Tstng D.11-06-017	JT	JTC	Strength Test								37,145	53,511	90,656	76,410	0	12,534	1,712		
847	Non-project costs	42402681	Hydrostatic Tstng D.11-06-017	JT	JTC	Strength Test								8	9,045	9,045	92,621	641	(84,210)			
848	Non-project costs	42421109	Hydrostatic Tstng D.11-06-017	JT	JTC	Strength Test								3,777	330,088	333,865	147,738	104,619	18,649	62,859		
849	Non-project costs	42465203	Hydrostatic Tstng D.11-06-017	JT	JTC	Strength Test								71	0	71	71	0	0	0		
850	Non-project costs	42465595	Hydrostatic Tstng D.11-06-017	JT	JTC	Strength Test								0	18	18	12	0	0	6		
851	Non-project costs	42482242	Hydrostatic Tstng D.11-06-017	JT	JTC	Strength Test								0	19,601	19,601	61,786	0	14,300	1,829		
852	Non-project costs	42490915	Hydrostatic Tstng D.11-06-017	JT	JTC	Strength Test								29,471	116,955	146,426	61,786	0	70,653	13,987		
853	Non-project costs	42511319	Hydrostatic Tstng D.11-06-017	JT	JTC	Strength Test								105	7,864	7,969	7,901	0	(705)	772		
854	Non-project costs	42603280	Hydrostatic Tstng D.11-06-017	JT	JTC	Strength Test								0	742,652	742,652	622,811	89,448	0	30,393		
855	Non-project costs	42648420	Hydrostatic Tstng D.11-06-017	JT	JTC	Strength Test								0	122,012	122,012	55,327	0	10,978	55,706		
856	Non-project costs	84001421	Hydrostatic Tstng D.11-06-017	JT	JTC	Strength Test								0	135,908	135,908	26,702	0	96,317	12,888		
857	Ye 2015 complete	41661855	II Direct Exam and Repair	HP	HPI	TIMP Projects	D-049B L-002 MP 145.22 Direct Examination and Repair ID-21-2	Westley	Mears	8/18/2014		8/25/2014		560,567	0	560,567	345,750	8,490	188,773	17,554		
858	Ye 2015 complete	41963737	II Direct Exam and Repair	HP	HPI	TIMP Projects	D-044A L-210C MP 21.34 Direct Examination and Repair ID-20-1	Fairfield	Mears	5/6/2014		5/19/2014		999,140	83,736	1,082,877	700,473	30,961	298,286	53,157		
859	Ye 2015 complete	42101322	II Direct Exam and Repair	HP	HPI	TIMP Projects	D-063B L-300A MP 447.49 Direct Examination and Repair ID-24-2	Paiches	Mears	5/13/2014		5/15/2014		522,942	(25,709)	497,233	85,827	9,768	325,816	75,821		
860	Ye 2015 complete	42311405	II Direct Exam and Repair	HP	HPI	TIMP Projects	D-240C L-101 MP 24.771 Direct Examination and Repair ID-42-3 *	San Mateo	Barnard	12/8/2014		12/13/2014		2,447,633	3,090	2,450,721	388,883	9,000	1,763,107	289,781		
861	Ye 2015 complete	30962282	Vintage Pipe Replacement	75	75E	Pipe Replacement	RT-093 L-302-095 MP 0.00 Replace Reducer	Meridian	Barnard	10/20/2014	CNG	11/4/2014		(3,839)	0	(3,839)	(6,764)	5,360	(4,784)	2,350		
862	Ye 2015 complete	30970383	Vintage Pipe Replacement	75	75E	Pipe Replacement	RT-094 L-302-096 MP 0.45 Replace Reducer	Meridian	Barnard	10/20/2014	CNG	11/4/2014		59,779	0	59,779	36,436	0	19,815	3,528		
863	Ye 2015 complete	30841616	Vintage Pipe Replacement	75	75E	Pipe Replacement	R-002 DFM-7221-15 1.60MM MP 0.04-1.64 Replace	Modesto	Underground	7/25/2012		11/6/2012		20,333	0	20,333	981	19,232	0	120		
864	Ye 2015 complete	30883440	Shallow Pipe	75	75M	Pipe Replacement	R-253 L-1248 MP 8.11 Exposed 8" Pipe	Wheatland	GT/GC	8/5/2013	CNG	8/20/2013		1	0	1	1	0	0	0		
865	Ye 2015 complete	30950574	Pipe Rplcmnt - Oth PL Sfty Inv	75	75O	Pipe Replacement	R-280 L-0578 Replace Tilt Meter	McDonald Island	Underground	10/9/2013	NO	11/1/2013		3,019	0	3,019	0	0	0	3,019	0	
866	Ye 2015 complete	30968139	Pipe Rplcmnt - Oth PL Sfty Inv	75	75O	Pipe Replacement	R-264 DFM-0817-01 MP 0.468-1.30 Replace	Capitola	GT/GC	12/11/2013		12/20/2013		3,197	0	3,197	1,699	0	6	883		
867	Ye 2015 complete	31015141	Pipe Rplcmnt - Oth PL Sfty Inv	75	75O	Pipe Replacement	R-437 L-197A MP 17.0 Repair Grade 2+ Leak	Lockeford		12/10/2013		12/10/2013		412	0	412	367	0	0	45		
868	Ye 2015 complete	30859792	Vintage Pipe Replacement	75	75E	Pipe Replacement	R-307 L-107 MP 29.27-31.21 Replace Fremont-Irving BALIP	Fremont	ARB	3/3/2014	CNG	10/20/2014		40,623,387	4,572,359	253,010	4,825,369	668,771	122,102	3,109,606	924,890	
869	Ye 2015 complete	30628834	Vintage Pipe Replacement	75	75E	Pipe Replacement	R-305 L-107 MP 26.01-26.61 Replace 3150ft of 36" BALIP	Fremont	ARB	5/1												

TABLE 11-1<sup>(a)</sup>  
TRANSMISSION PIPELINE PROJECT SUMMARIES  
(CONTINUED)

Line No	Construction Phase	Order Number	Program Description	SAP MWC	SAP MA <sup>(b)</sup>	Project Description	Project Name	City	Construction Contractor	Mobilization Date	CNG/LNG	Tie-in Date/ERO	Job Estimate Amount	Total Cost 2015 Actuals Full Year	Total Cost 2016 Actual YTD	Grand Total (2015 + 2016)	Labor Cost	Materials Cost	Contracts Cost	Other Cost	Variance to Budget (IE-Total Cost Inception to Date for Completed Projects)	Total Costs Inception to Date for Completed Projects
886	ye 2015 complete	30857344	Vintage Pipe Replacement	75	75E	Pipe Replacement	S-569 GT-Install OPP at El Paso Interconnect	Topock	TBD	5/8/2012	NO	5/8/2012		(1,131.0)	148,685		137,375	60,913	0	(27,465)	103,928	
887	ye 2015 complete	31016343	Vintage Pipe Replacement	75	75E	Pipe Replacement	R-438 DFM-0205-01 MP 0.96 Walsh Road Grade 1	Woodside		11/14/2013		11/14/2013		5,617	191		5,808	1,240	0	1,746	2,822	
888	ye 2015 complete	30915268	LI Upgrades	98	98C	In-Line Inspection	R-050 L-108 0.30MI MP 39.17-39.44 Replace CLC	Lodi		9/24/2012		12/4/2012		9,664	0		9,664	1,046	8,490	0	128	
889	ye 2015 complete	30966292	LI Upgrades	98	98C	In-Line Inspection	I-067 L-177A MP 94.81 - 95.05 Replace Pipeline	Hayfork	Michels	7/14/2014		9/26/2014		71,145	0		71,145	22,655	(9,501)	54,251	3,739	
890	ye 2015 complete	31086125	LI Upgrades	98	98C	In-Line Inspection	I-0490 DFM-1202-17 MP 0.00-2.58 LI Upgrade	Fresno	GT/GC	12/10/2014	NO	12/10/2014		11,101	0		11,101	4,872	0	139	5,791	
891	ye 2015 complete	30677902	LI Upgrades	98C		In-Line Inspection	I-013A L-132 MP 0 to 32.93 LI Upgrade	Milpitas	ARB	6/2/2012		3/7/2013	28,300,000	227,748	90,793	318,542	72,235	38,478	107,684	100,745		
892	ye 2015 complete	30712935	LI Upgrades	98	98C	In-Line Inspection	I-015A L-101 MP 11.83-33.68 LI Upgrade Replace 34" W/24 19.78 Winslow	Redwood City	ARB	12/17/2013	NO	3/28/2014	14,686,269	55,301	28,672	83,973	8,872	46,725	20,408	7,968		
893	ye 2015 complete	30712995	LI Upgrades	98	98C	In-Line Inspection	I-0148 L-101 MP 0.28 Remove Drip Coyote Creek	Milpitas	ARB	4/29/2013		5/3/2013	13,280,736	49,230	64,877	114,107	18,277	33,347	46,785	15,698		
894	ye 2015 complete	30603909	LI Upgrades	98	98C	In-Line Inspection	I-032 L-105N MP 7.75-22.85 LI Upgrade	Fremont		8/3/2013	NO	8/8/2013	11,441,674	16,943	5,396	22,339	5,571	10,000	4,660	2,107		
895	ye 2015 complete	30963799	LI Upgrades	98	98C	In-Line Inspection	I-040 L-114 Pig Launcher/receiver At Dalton	Livermore	Underground	7/14/2014		8/29/2014	4,438,842	378,048	7,256	385,303	184,466	0	(162,169)	363,006		
896	ye 2015 complete	30968135	LI Upgrades	98	98C	In-Line Inspection	I-042 L-210B MP 14.30 Casing Replacement	Suisun City	Barnard	4/28/2014	CNG	5/29/2014	1,901,240	(154)	3,043	2,859	3,641	(45)	(2,608)	1,871		
897	ye 2015 complete	30906228	LI Upgrades	98C		In-Line Inspection	I-009 L-210A MP 19.5-25.9 LI Upgrade	Napa	GT/GC	5/28/2013		8/27/2013	715,962	4979	191	5,370	1,953	0	1,009	2,208		
898	ye 2015 complete	30932744	LI Upgrades	98	98C	In-Line Inspection	R-268 L-057B MP 0.0152-0.0194 Replace	Brentwood	GT/GC	5/1/2013		6/10/2013	551,230	11,599	2,407	14,005	365	0	12,760	881		
899	ye 2015 complete	41504836	LI Direct Exam and Repair	HP	HPH	TIMP Projects	I-018 L-057A MP 9.48-16.68 LI DER	Brentwood	TBD	3/1/2013		3/18/2013		3,413	0	3,413	(40)	1,616	1,836	0		
900	ye 2015 complete	41608463	Traditional LI Runs	HP	HPB	TIMP Projects	I-019 L-057B MP 0.00-16.66 LI Re-Inspection	Brentwood	GT/GC	6/3/2013		6/28/2013		27,190	0	27,190	27,190	0	0	0		
901	ye 2015 complete	41608468	Traditional LI Runs	HP	HPB	TIMP Projects	I-022 L-210C MP 19.47-32.11 Piggings & Analysis	Sacramento	GT/GC	5/21/2013		9/18/2013		7,017	0	7,017	120	6,897	0	0		
902	ye 2015 complete	41612944	Traditional LI Runs	HP	HPB	TIMP Projects	I-016 L-102 MP 12.18-158.00 LI Re-Inspection	Brentwood	GT/GC	5/6/2013		8/1/2013		187	0	187	(0)	187	0	0		
903	ye 2015 complete	41720554	Traditional LI Runs	HP	HPB	TIMP Projects	I-012 L-172A MP 40.73-69.81 LI Re-Inspection	Davis	GT/GC	9/3/2013		9/28/2013		29,963	0	29,963	12,425	0	0	17,537		
904	ye 2015 complete	40722786	Casing Mitigation	HP	HPG	TIMP Projects	D-086A DCU51222 MP 0.0 Casing Remediation CD-27A	Madera	Mears	11/12/2014		11/13/2014		0	0	0	0	0	(22,219)	22,219		
905	ye 2015 complete	42081835	Traditional LI Runs	HP	HPB	TIMP Projects	I-069 L-177A MP 8.90-9.30 Non-Traditional LI	Hamilton City	GT/GC	5/17/2014		10/682		10,682	5,444	0	4,429	809				
906	ye 2015 complete	42081837	Traditional LI Runs	HP	HPB	TIMP Projects	I-070 L-134A MP 25.55 Non-Traditional LI	Mendota	GT/GC	5/3/2014		5/7/2014		36,134	0	36,134	23,412	5,150	7,337	235		
907	ye 2015 complete	42125239	Casing Mitigation	HP	HPG	TIMP Projects	D-085A DCU51222 MP 0.0 Casing Remediation CD-26A	Madera	Mears	11/11/2014		11/15/2014		0	0	0	0	(11,000)	11,000			
908	ye 2015 complete	42154126	Traditional LI Runs	HP	HPB	TIMP Projects	I-083 DFM-1615-01 Non-Traditional LI	Modesto	GT/GC	7/25/2014	NO	8/8/2014		9,036	0	9,036	157	0	11,526	(2,647)		
909	ye 2015 complete	42173227	Traditional LI Runs	HP	HPB	TIMP Projects	I-092 L-132 MP 45.09 Non-Traditional LI	Brisbane	GT/GC	8/25/2014		9/8/2014		13,181	0	13,181	6,743	3,082	2,512	845		
910	ye 2015 complete	41608471	Traditional LI Runs	HP	HPB	TIMP Projects	I-081 L-102 MP 82.34-149.10 Piggings & Analysis	Burney	TBD	8/26/2014		9/20/2014	2,706,436	(6,604)	5,596	(1,099)	1,878	4	(1,338)	(1,643)		
911	ye 2015 complete	41608682	Traditional LI Runs	HP	HPB	TIMP Projects	I-026 L-153 MP 0.00-17.65 LI Re-Inspection	Fremont	GT/GC	4/10/2014		7/14/2014	1,494,916	14,320	7,426	21,746	3,767	0	2,458	15,521		
912	ye 2015 complete	41449662	Traditional LI Runs	HP	HPB	TIMP Projects	I-021 L-105N MP 7.75-22.86 Piggings and Analysis	Fremont	GT/GC	7/9/2012		4/12/2013	1,492,026	16,092	2,966	19,058	400	16,158	2,500	0		
913	ye 2015 complete	41612937	Traditional LI Runs	HP	HPB	TIMP Projects	I-028 L-021E MP 64.53-84.53 LI Re-Inspection	Healdsburg	GT/GC	11/27/2013		3/10/2014	1,440,410	(1,180)	2,613	1,433	534	0	1,972	(1,074)		
914	ye 2015 complete	41696079	Traditional LI Runs	HP	HPB	TIMP Projects	I-029 L-300A MP 393-450 LI Re-Inspection	Mendota	GT/GC	12/9/2013		2/19/2014	1,308,241	6,423	4,087	10,510	1,966	5,574	1,923	1,047		
915	ye 2015 complete	41612943	Traditional LI Runs	HP	HPB	TIMP Projects	I-034 L-108 MP 0.00-11.81 LI Re-Inspection	Crocker	GT/GC	5/9/2014		5/19/2014	1,243,939	646	5,803	2,952	1,591	2,055	987			
916	ye 2015 complete	41661850	Traditional LI Runs	HP	HPB	TIMP Projects	I-030 L-300A MP 450-502 LI Re-Inspection	Hollister	GT/GC	3/8/2014	CNG	3/14/2014	1,166,119	(223)	5,038	4,816	2,967	0	2,330	(482)		
917	ye 2015 complete	41616085	Traditional LI Runs	HP	HPB	TIMP Projects	I-035 L-114 MP 9.03-16.59 LI Re-Inspection	Oakley	GT/GC	3/1/2014		5/30/2014	1,137,224	3,557	9,354	9,354	8,279	0	995	81	(156,469)	1,322,588
918	ye 2015 complete	41616087	Traditional LI Runs	HP	HPB	TIMP Projects	I-037 L-57C MP 0.00-6.04 LI Re-Inspection	Stockton	GT/GC	7/14/2014		7/18/2014	876,074	4,063	4,724	8,787	3,096	4,047	1,578	66		
919	ye 2015 complete	42224346	Traditional LI Runs	HP	HPB	TIMP Projects	I-098 L-120N MP 12.67-13.82 Non-Traditional LI	Bakersfield	GT/GC	12/1/2014	NO	12/13/2014	686,576	103,319	3,761	106,932	14,218	23,313	68,402	999		
920	ye 2015 complete	42222318	Traditional LI Runs	HP	HPB	TIMP Projects	I-097 DFM-7223-01 MP 8.912 Non-Traditional LI	Turlock	GT/GC	11/10/2014	NO	12/3/2014	606,448	39,822	2,865	42,688	7,463	3,636	32,127	(538)		
921	ye 2015 complete	42109978	Traditional LI Runs	HP	HPB	TIMP Projects	I-075 L-118A Non-Traditional LI	Merced	Snelson	7/14/2014		7/24/2014	574,084	10,506	6,498	17,005	4,430	3,815	9,077	(118)		
922	ye 2015 complete	41857445	Casing Mitigation	HP	HPG	TIMP Projects	C-176 L-400 MP 25.65 Casing Remediation	Merced	Mears	2/19/2014		10/10/2013	323,269	2,836	2,065	4,901	1,297	0	2,053	1,593		
923	ye 2015 complete	42098046	Casing Mitigation	HP	HPG	TIMP Projects	RT-088 L-111A MP 18.2 Casing Remediation	Fresno	GT/GC	11/17/2014		12/18/2014		372	7,031	7,403	3,312	1,294	21,361	(18,565)		
924	ye 2015 complete	41498570	LI Direct Exam and Repair	HP	HPH	TIMP Projects	D-006L L-208 MP 13.11 Direct Examination and Repair ID-10I	Fairfield	GC/Mears	11/19/2013		12/12/2013		15,208	191	15,399	3,671	0	938	10,790		
925	ye 2015 complete	41521150	LI Direct Exam and Repair	HP	HPH	TIMP Projects	D-015E L-105N MP 22.28 Direct Examination and Repair ID-14E	San Lorenzo	Mears	2/24/2014		3/11/2014		2,319	570	2,890	941	0	1,943	6		
926	ye 2015 complete	41616089	LI Direct Exam and Repair	HP	HPH	TIMP Projects	D-019B L-300A MP 281.21 Direct Examination and Repair ID-11B	Bakersfield	GT/GC	9/22/2014		10/13/2014		230,029	20,546	250,575	226,422	1,413	7,743	14,997		
927	ye 2015 complete	41661849	LI Direct Exam and Repair	HP	HPH	TIMP Projects	D-022A L-057B MP 5.45 Direct Examination and Repair ID-19-I	Stockton	Mears	5/5/2014		5/12/2014		15,622	6,847	22,469	16,451	0	2,878	3,139		
928	ye 2015 complete	41661854	LI Direct Exam and Repair	HP	HPH	TIMP Projects	I-013F L-300B MP 497.59 Direct Examination and Repair ID-15F	San Jose	Mears	2/15/2014		2/19/2014		5,555	6,513	12,069	10,543	0	1,217	308		
929	ye 2015 complete	42125236	Casing Mitigation	HP	HPG	TIMP Projects	D-084A DRE4414 MP 0.0 Casing Remediation CD-25A	Madera	Mears	11/8/2014		11/13/2014		0	369	369	0	0	(20,755)	21,124		
930	ye 2015 complete	41372116	Casing Mitigation	HP	HPG	TIMP Projects	D-099A DFM-1601-09 MP 0.42 Casing Remediation CD-32A	Tracy	Mears	8/12/2014		8/25/2014		0	166	166	170	0	1,886	(1,891)		
931	ye 2015 complete	41017563	Hydrostatic Tstng D.11-06-017	JT	JTC	Strength Test	R-277 DFM-0643-01 MP 0-0.8 Uprate	Arbuckle	GT/GC	8/22/2013	CNG	10/2/2013		5,586	0	5,586	871	0	3,295	1,421		
932	ye 2015 complete	42177857	Hydrostatic Tstng D.11-06-017	JT	JTC	Strength Test	T-037-14 L-302-178 MP 0-0.034 Test	Meridian	GT/GC	9/24/2014	CNG-<25%	11/14/2014		13,228	0	13,228	7,542	1,800	4,245	(359)		
933	ye 2015 complete	41801018	Hydrostatic Tstng D.11-06-017	JT	JTC	Strength Test	T-0918-12 L-210B MP 20.22-22.98 Test	Suisun City	Barnard	8/12/2013	CNG-<25%	9/17/2013	2,700,313	10,257	3,952	14,209	8,914	0	3,061	2,234		
934	ye 2015 complete	41699027	Hydrostatic Tstng D.11-06-017	JT	JTC	Strength Test	T-174-12 DFM-1816-05 Test	Watsonville	Underground	5/17/2013	CNG-<25%	7/29/2013	2,285,844	25,983	11,762	37,745	14,876	0	18,012	4,857		
935	ye 2015 complete	42157033	Hydrostatic Tstng D.11-06-017	JT	JTC	Strength Test	T-035-14 L-302-175 MP 0-0.0668 Test	Meridian	GT/GC	9/24/2014	CNG-<25%	11/14/2014	753,696	26,371	4,053	30,425	13,783	3,073	12,971	598		
936	ye 2015 complete	41896934	Hydrostatic Tstng D.11-06-017	JT	JTC	Strength Test	T-0054-13 L-148 Test	Manteca	GT/GC	6/28/2013		7/15/2013		6,871	191	7,062	1,155	0	5,465	442		
937	Pre-construction	42466229	LI Direct Exam and Repair	HP	HPH	TIMP Projects	D-436F L-021D MP 24.64 Direct Examination and Repair ID-60-7	Petaluma	Teichert	3/15/2017		3/23/2017		29,086	325,525	354,611	130,585	8,096	134,849	81,081		
938	Pre-construction	30888834	Vintage Pipe Replacement	75	75E	Pipe Replacement	R-310 Rebuild Walnut Crossover BALIP	Brentwood	ARB	8/9/2017	NO	9/13/2017	2,884,742	362,521	450,486	813,008	273,505	16,285	272,977	250,240		
939	Pre-construction	31060777	Pipe Rplcmnt - Oth PL Sfty Inv	75	75D	Pipe Replacement	RT-091 DFM-7224-09 MP 1.4811-1.5490 Relocate 8"	Modesto	Snelson	3/3/2017		3/30/2017		63,411	207,761							

TABLE 11-1<sup>(a)</sup>  
TRANSMISSION PIPELINE PROJECT SUMMARIES  
(CONTINUED)

Line No	Construction Phase	Order Number	Program Description	SAP MWC	SAP MA <sup>TM</sup>	Project Description	Project Name	City	Construction Contractor	Mobilization Date	CNG/LNG	Tie-in Date/ERO	Job Estimate Amount	Total Cost 2015 Actuals Full Year	Total Cost 2016 Actual YTD	Grand Total (2015 + 2016)	Labor Cost	Materials Cost	Contracts Cost	Other Cost	Variance to Budget (IE-Total Cost Inception to Date for Completed Projects)	Total Costs Inception to Date for Completed Projects	
963	Pre-construction	74000788	Vintage Pipe Replacement	75	75E	Pipe Replacement	R-510 L-153 2.28MI MP 23.77-26.05 Replace Vintage Pipe	Oakland	ARB	10/2/2017	TBD	4/16/2018		559,749	716,967	1,276,716	209,415	101,421	394,526	571,354			
964	Pre-construction	74000789	Vintage Pipe Replacement	75	75E	Pipe Replacement	R-511 L-153 1.14MI MP 26.62-27.88 Replace Vintage Pipe	Oakland	ARB	3/15/2017	TBD	9/21/2017		404,633	732,084	1,136,718	264,467	52,739	317,820	501,691			
965	Pre-construction	74000908	Vintage Pipe Replacement	75	75E	Pipe Replacement	R-3098 L-107 1.18MI MP 32.37-33.55 BALIP	Fremont	Bid	3/1/2017	NO	8/9/2017		37,504	181,936	219,440	84,032	971	15,811	118,625			
966	Pre-construction	74000962	Vintage Pipe Replacement	75	75E	Pipe Replacement	R-317 L-147 MP 0.85-1.98 Relocate 6500ft	San Carlos	Underground	TBD	TBD	TBD		16,691	989	17,680	7,591	0	6,024	4,066			
967	Pre-construction	74001458	Vintage Pipe Replacement	75	75E	Pipe Replacement	R-706 L-300A MP 282.25-284.15 Replace	Rosedale	TBD	TBD	TBD		460	(460)	0	405	0	0	(405)				
968	Pre-construction	74001459	Vintage Pipe Replacement	75	75E	Pipe Replacement	R-707 L-131 MP 27.02-28.00 Replace 5100ft of 24"	Livermore	Underground	3/20/2018	CNG	8/10/2018		153	96,977	97,130	18,525	0	0	76,605			
969	Pre-construction	74001622	Shallow Pipe	75	75M	Pipe Replacement	R-208 DFM-1817-01 0.77MI MP 0.00-2.00 Replace Spread 182	Watsonville	Snelson	4/16/2018	TBD	7/16/2018		9,245	167,355	176,600	23,150	0	10,137	143,312			
970	Pre-construction	74001624	Vintage Pipe Replacement	75	75E	Pipe Replacement	R-517 DFM-1818-01 0.20MI MP 2.49-2.69 Replace	Santa Cruz	Underground	5/11/2017	TBD	6/26/2017		206	273,255	273,461	91,045	0	31,822	150,595			
971	Pre-construction	74001625	Pipe Replacement Class Locn	75	75H	Pipe Replacement	R-705 L-401 0.92MI MP 32.75-328.44 Replace 36"	Tracy	GT/GC	3/14/2017	TBD	7/1/2017		908	49,548	50,455	16,709	0	0	33,746			
972	Pre-construction	74003106	Pipe Rplcmnt - Oth PL Sfty Inv	75	75O	Pipe Replacement	R-719 L-1248 MP 0.0-20.84 Retirement	Lincoln	TBD	6/18/2018	TBD	11/6/2018		0	136,418	136,418	33,380	0	44,258	58,780			
973	Pre-construction	74003150	Shallow Pipe	75	75M	Pipe Replacement	R-717 L-0578 MP 3.39 - 4.31 Replace	McDonald Island	TBD	8/1/2017	TBD	12/14/2017		0	22,131	22,131	12,668	0	0	9,463			
974	Pre-construction	74004021	Pipe Replacement Class Locn	75	75H	Pipe Replacement	R-649 L-131 0.14MI MP 31.83-32.38 Replace	Livermore	Underground	3/20/2018	CNG	8/10/2018		0	217,055	217,055	103,607	0	48,044	65,404			
975	Pre-construction	74004041	Pipe Rplcmnt - Oth PL Sfty Inv	75	75O	Pipe Replacement	R-474 DFM-3006-01 0.01MI MP 5.05 Relocate 700ft of 6" Pipeline	Pleasant Hill	ARB	4/14/2017	TBD	5/26/2017		0	301,934	301,934	59,552	0	5,621	236,760			
976	Pre-construction	74004044	Vintage Pipe Replacement	75	75E	Pipe Replacement	R-504 L-153 4.014MI MP 5.32-5.46 Replace 12" Pipe	Fremont	GT/GC	3/20/2017	NO	5/11/2017		0	335,283	335,283	153,902	0	34,635	146,746			
977	Pre-construction	74004048	Vintage Pipe Replacement	75	75E	Pipe Replacement	R-582 DFM-0613-01 MP 3.29-4.04 Replace	Barnard	ARB	5/14/2018	TBD	10/18/2018		0	263,299	263,299	125,341	0	37,470	100,487			
978	Pre-construction	74004050	Vintage Pipe Replacement	75	75E	Pipe Replacement	R-508 L-105N 0.28MI MP 28.13-30.27 Replace 24" Pipe	Oakland	ARB	5/30/2017	NO	9/9/2017		0	601,585	601,585	104,257	3	319,638	177,688			
979	Pre-construction	74004051	Vintage Pipe Replacement	75	75E	Pipe Replacement	R-675 L-402 MP 34.97 Bury Shallow Pipe	Redding	Barnard	5/16/2017	NO	10/10/2017		0	552,870	552,870	108,310	1,106	319,054	124,400			
980	Pre-construction	74004052	Vintage Pipe Replacement	75	75E	Pipe Replacement	R-506 DFM-0601-01 1.28MI 0.55MI MP 2.27-3.55	San Rafael	ARB	4/16/2018	CNG	6/5/2018		0	358,544	358,544	72,441	0	82,343	203,760			
981	Pre-construction	74004053	Vintage Pipe Replacement	75	75E	Pipe Replacement	R-501 L-153 0.05MI MP 34.3-34.18 Replace 12" Pipe	Union City	ARB	4/13/2017	NO	5/12/2017		0	667,027	667,027	138,232	0	30,572	498,222			
982	Pre-construction	74004055	Shallow Pipe	75	75M	Pipe Replacement	R-319 L-314 MP 26.6 Lower Pipeline	Victorville	Snelson	8/18/2017	TBD	1/16/2018		0	228,303	228,303	143,461	0	750	84,091			
983	Pre-construction	74004057	Vintage Pipe Replacement	75	75E	Pipe Replacement	R-674 L-021F 0.00625MI MP 16.6 Mitigate Risk to Span	Novato	ARB	9/18/2017	TBD	2/13/2018		0	84,749	84,749	52,974	0	2,300	29,475			
984	Pre-construction	74004059	Shallow Pipe	75	75M	Pipe Replacement	R-677 L-300A MP 16.5-17.1 Replace Shallow Pipe	Prunedale	Snelson	4/17/2017	TBD	9/11/2017		0	160,034	160,034	42,648	0	1,267	116,119			
985	Pre-construction	74004062	Shallow Pipe	75	75M	Pipe Replacement	R-409 L-400 0.47MI MP 14.17 Replace Exposed Pipe Salt Creek	Red Bluff	Barnard	4/27/2018	TBD	9/3/2018		0	365,243	365,243	139,606	0	98,801	126,836			
986	Pre-construction	74004063	Vintage Pipe Replacement	75	75E	Pipe Replacement	R-700 L-131 MP 28.00-31.83 Replace 24" Vintage	Livermore	Underground	3/20/2018	CNG	8/10/2018		0	506,545	506,545	95,401	0	235,996	176,149			
987	Pre-construction	74004221	Vintage Pipe Replacement	75	75E	Pipe Replacement	R-767 DFM-0621-01 MP 0.00-0.98 Replacement	Woodland	GT/GC	3/11/2017	TBD	4/7/2017		0	90,096	90,096	5,600	0	6,091	78,405			
988	Pre-construction	74004320	Vintage Pipe Replacement	75	75E	Pipe Replacement	R-766 L-400 0.06MI MP 139.25 Replace Exposed Pipe Little Salt Creek	Red Bluff	TBD	5/26/2018	TBD	8/31/2018		0	98,195	98,195	33,215	0	3,259	61,721			
989	Pre-construction	74004560	Vintage Pipe Replacement	75	75E	Pipe Replacement	R-818 L-401 0.06MI MP 139.25 Replace Exposed Pipe Little Salt Creek	Red Bluff	TBD	5/26/2018	TBD	8/31/2018		0	54,840	54,840	29,321	0	10,877	14,642			
990	Pre-construction	74005083	Shallow Pipe	75	75M	Pipe Replacement	R-826 L-300B MP 500.46 Replace Exposed Pipe Penitencia	Milpitas	TBD	5/16/2018	TBD	7/18/2018		0	276,034	276,034	65,812	0	69,539	140,863			
991	Pre-construction	74005055	Pipe Replacement Class Locn	75	75H	Pipe Replacement	R-832 L-300A MP 280.58-281.13 CCC Replace	Bakersfield	TBD	3/1/2018	TBD			0	9,945	9,945	3,342	0	0	6,602			
992	Pre-construction	74005740	Shallow Pipe	75	75M	Pipe Replacement	R-499 DFM-1312-02 MP 0.53 Replace 80ft of 2" Pipe	Orinmore	TBD		NO			0	20,449	20,449	6,085	0	0	14,364			
993	Pre-construction	74006107	Pipe Rplcmnt - Oth PL Sfty Inv	75	75O	Pipe Replacement	R-840 DFM-8832-01 MP 0.02-0.12 Retire 500	Sunnyvale	TBD	10/18/2017	TBD	11/16/2017		0	2,743	2,743	2,036	0	0	708			
994	Pre-construction	74006202	Vintage Pipe Replacement	75	75E	Pipe Replacement	R-838 L-057A-MD1 MP 0.418-1.13 Retire Pipeline	McDonald Island	ARB	9/1/2017	NO	10/2/2017		0	11,387	11,387	5,652	0	0	5,736			
995	Pre-construction	74006207	Pipe Rplcmnt - Oth PL Sfty Inv	75	75O	Pipe Replacement	R-839 DFM-0606-02 MP 1.07-3.03 Retire Pipeline	Elk Grove	TBD	7/20/2017	TBD	8/18/2017		0	18,912	18,912	9,720	0	0	9,191			
996	Pre-construction	74006845	Pipe Rplcmnt - Oth PL Sfty Inv	75	75O	Pipe Replacement	T-10358 L-118A MP 56.87-60.20 Retirement	Merced	Snelson	10/10/2016	NO	TBD		0	86,554	86,554	32,607	0	973	52,973			
997	Pre-construction	30965873	II Upgrades	98	98C	In-Line Inspection	L-1098 L-153 MP 17.61-18.02 II Upgrade	San Leandro	ARB	11/15/2016	NO	12/9/2016	14,711,467	7,140,116	361,368	7,501,485	1,374,099	424,277	5,311,404	391,704			
998	Pre-construction	31164746	II Upgrades	98	98C	In-Line Inspection	L-103C L-173 MP 3.22-9.79 II Upgrade	Rocklin	GT/GC	1/3/2017	NO	3/28/2017	6,010,240	56,314	1,088,558	1,144,872	322,683	90,698	157,357	574,134			
999	Pre-construction	31167621	II Upgrades	98	98C	In-Line Inspection	L-0078 L-132 MP 42.25-42.37 II Upgrade	San Bruno	ARB	2/19/2019	NO	3/26/2019	4,765,556	38,288	468,590	506,878	125,593	0	76,884	304,402			
1000	Pre-construction	31164943	II Upgrades	98	98C	In-Line Inspection	L-1158 DFM-1202-16 MP 0.2-0.59 II Upgrade	Fresno	TBD	2/2/2018	CNG	2/27/2018	4,400,967	99,569	852,581	952,151	263,064	47,473	156,355	485,459			
1001	Pre-construction	31042554	II Upgrades	98	98C	In-Line Inspection	L-0508 DFM-0126-01 MP 0.26 II Upgrade	Richmond	ARB	3/20/2017	CNG	6/5/2017	4,201,571	502,339	324,257	826,596	288,556	131,924	157,182	248,733			
1002	Pre-construction	31164980	II Upgrades	98	98C	In-Line Inspection	L-1028 L-300B MP 203.07-221.27 II Upgrade	Tehachapi	GT/GC	2/9/2017	NO	4/10/2017	3,066,076	52,993	51,391	104,384	39,949	23,269	56,336	(15,170)			
1003	Pre-construction	31164747	II Upgrades	98	98C	In-Line Inspection	L-1038 L-173 II Upgrade Receiver	Auburn	TBD	3/28/2017	NO	7/17/2017	2,933,028	489,530	1,246,060	1,735,590	461,121	74,119	208,856	991,442			
1004	Pre-construction	31164747	II Upgrades	98	98C	In-Line Inspection	L-1030 L-173 MP 9.79-17.56 II Upgrade	Auburn	TBD	3/28/2017	NO	7/22/2017	2,321,395	41,198	199,347	2,405,549	98,232	52,212	1,987	97,114			
1005	Pre-construction	31100688	II Upgrades	98	98C	In-Line Inspection	L-1138 DFM-2403-12 II Upgrade Launcher	Newark	ARB	1/23/2018	NO	4/30/2018	2,089,044	130,058	458,681	588,739	120,669	116,985	183,348	167,737			
1006	Pre-construction	31164985	II Upgrades	98	98C	In-Line Inspection	L-1027 L-300B MP 237.50-256.64 II Upgrade	Tehachapi	GT/GC	TBD	NO	TBD		1,802,449	32,465	835	33,300	21,236	0	21,337	(9,273)		
1007	Pre-construction	31164749	II Upgrades	98	98C	In-Line Inspection	L-1134 DFM-2403-12 MP 0.0-2.88 II Upgrade	Fremont	ARB	1/23/2018	CNG	4/30/2018	984,068	31,618	158,835	190,454	79,611	9,863	14,535	86,444			
1008	Pre-construction	31164748	II Upgrades	98	98C	In-Line Inspection	L-103A L-173 II Upgrade	Rocklin	GT/GC	12/15/2016	NO	2/24/2017	6,251	165,875	943,971	1,109,845	262,443	211,034	272,192	364,176			
1009	Pre-construction	30901389	II Upgrades	98	98C	In-Line Inspection	L-107A L-132 MP 40.07 II Upgrade Healy Launcher	San Bruno	Underground	2/19/2019	NO	4/6/2019	66,213	210,922	277,134	90,718	(61,729)	113,190	134,955				
1010	Pre-construction	31100831	II Upgrades	98	98C	In-Line Inspection	L-104A L-177A II Upgrade Launcher (Cummings Creek)	Humboldt Hill	Underground	5/10/2017	NO	7/27/2017	147,327	528,170	675,497	395,605	1,004	95,668	183,220				
1011	Pre-construction	31101189	II Upgrades	98	98C	In-Line Inspection	L-101A L-300A MP 203.02 PLS3A II Upgrade Launcher	Tehachapi	GT/GC	6/26/2017	NO	8/22/2017	124,958	129,103	254,061	103,045	2,348	97,750	50,918				
1012	Pre-construction	31101190	II Upgrades	98	98C	In-Line Inspection	L-102A L-300B MP 203.07 PLS3B II Upgrade Launcher	Tehachapi	GT/GC	2/9/2017	NO	4/10/2017	69,880	152,695	222,575	89,446	1,867	51,123	80,139				
1013	Pre-construction	31101191	II Upgrades	98	98C	In-Line Inspection	L-114A L-316-2 MP 0.87-1.36, L-316-20 II Upgrade	Brentwood	GT/GC	3/6/2017	NO	4/28/2017	19,297	249,595	268,892	84,821	0	18,918	165,153				
1014	Pre-construction	31101196	II Upgrades	98	98C	In-Line Inspection	L-1060 GUST5574 MP 0.0-2.17 II Upgrade	Sacramento	TBD	6/15/2017	LNG	8/25/2017	0	70,796	70,796	12,808	0	34,731	23,258				
1015	Pre-construction	31101293	II Upgrades	98	98C	In-Line Inspection	L-106C DFM-0639-01 MP 0.																

TABLE 11-1<sup>(a)</sup>  
TRANSMISSION PIPELINE PROJECT SUMMARIES  
(CONTINUED)

Line No	Construction Phase	Order Number	Program Description	SAP MWC	SAP MA <sup>(b)</sup>	Project Description	Project Name	City	Construction Contractor	Mobilization Date	CNG/LNG	Tie-in Date/ERO	Job Estimate Amount	Total Cost 2015 Actuals Full Year	Total Cost 2016 Actual YTD	Grand Total (2015 + 2016)	Labor Cost	Materials Cost	Contracts Cost	Other Cost	Variance To Budget (IE-Total Cost Inception to Date for Completed Projects)	Total Costs Inception to Date for Completed Projects
1042	Pre-construction	31166119	IU Upgrades	98	98C	In-Line Inspection	I-1268 L-3008 MP 40.49 P518 IU Upgrade Receiver	Essex	Snelson	3/11/2019	NO	4/8/2019		3,658	60,160	63,818	16,150	1,867	21,012	24,789		
1043	Pre-construction	31167255	IU Upgrades	98	98C	In-Line Inspection	I-0718 L-021H Crockett Station IU Upgrade Receiver	Crockett	TBD	6/10/2017				33,492	1,294	34,786	6,482	0	19,157	9,147		
1044	Pre-construction	31167256	IU Upgrades	98	98C	In-Line Inspection	I-071C L-021H *Feature 2 IU Upgrade	Crockett	TBD	6/10/2017		7/10/2017		44,978	116,724	161,702	30,684	138	103,118	27,763		
1045	Pre-construction	31167257	IU Upgrades	98	98C	In-Line Inspection	I-127A L-105A MP 42.91-52.01 IU Upgrade Launcher	Berkeley	TBD	TBD				973,779	249,319	1,223,098	97,202	0	20,079	1,105,817		
1046	Pre-construction	31167258	IU Upgrades	98	98C	In-Line Inspection	I-127C L-105A MP 42.91-52.01 IU Upgrade Receiver	Berkeley	TBD	TBD				20,441	30,090	50,531	19,311	0	7,977	23,243		
1047	Pre-construction	31167259	IU Upgrades	98	98C	In-Line Inspection	I-105A DFM-2408-05 IU Upgrade Launcher	Dublin	ARB	6/22/2017	CNG	8/12/2017		46,653	141,478	188,131	50,267	0	62,971	74,893		
1048	Pre-construction	31167440	IU Upgrades	98	98C	In-Line Inspection	I-105B DFM-2408-05 IU Upgrade Receiver	Dublin	ARB	6/22/2017	LNG	9/8/2017		23,897	193,657	217,554	42,726	0	104,766	70,063		
1049	Pre-construction	31167442	IU Upgrades	98	98C	In-Line Inspection	I-099C L-138 Pipeline Replace 1150 ft IU Upgrade	Easton	TBD	6/10/2017		7/15/2017		29,222	27,906	57,128	7,537	0	45,046	4,545		
1050	Pre-construction	31167443	IU Upgrades	98	98C	In-Line Inspection	I-099E L-138 MP 38.58-43.40 IU Upgrade	Easton	TBD	6/10/2017		7/10/2017		158,843	(97,984)	60,859	9,005	0	42,002	9,852		
1051	Pre-construction	31167446	IU Upgrades	98	98C	In-Line Inspection	I-104B L-177A IU Upgrade Receiver (HBPP)	Humboldt Hill	Underground	5/10/2017	CNG	5/26/2017		66,167	401,959	468,126	168,152	53,268	117,831	128,874		
1052	Pre-construction	31167447	IU Upgrades	98	98C	In-Line Inspection	I-104C L-177A Bypass Tompkins Hill Reg Sta IU Upgrade	Humboldt Hill	Underground	5/10/2017	NO	5/26/2017		20,075	478,809	498,885	59,272	43,699	208,152	187,762		
1053	Pre-construction	31167448	IU Upgrades	98	98C	In-Line Inspection	I-104D L-189 MP 0-1.72 IU Upgrade (Humboldt Hill Sta) Valve Lot	Humboldt Hill	Underground	5/10/2017	CNG	5/26/2017		37,993	808,480	846,473	156,550	72,355	191,730	425,837		
1054	Pre-construction	31167449	IU Upgrades	98	98C	In-Line Inspection	I-104E L-177A MP 163.04-170.39 IU Upgrade	Hydenville	Underground	5/10/2017	NO	5/26/2017		24,442	232,974	257,416	65,706	25,541	75,429	90,740		
1055	Pre-construction	31167450	IU Upgrades	98	98C	In-Line Inspection	I-104F L-177A MP 170.38-173.90 IU Upgrade	Fortuna	Underground	5/10/2017	NO	6/8/2017		64,983	178,422	243,405	68,354	30,111	49,581	95,359		
1056	Pre-construction	31167451	IU Upgrades	98	98C	In-Line Inspection	I-104G L-189 MP 0-0-0.07 Replacement 1, IU Upgrade	Fortuna	Underground	5/10/2017	NO	5/26/2017		21,171	283,636	304,807	78,837	29,567	124,772	71,630		
1057	Pre-construction	31167452	IU Upgrades	98	98C	In-Line Inspection	I-104H L-177A MP 178.89-182.40 IU Upgrade	Fortuna	Underground	5/10/2017	NO	5/26/2017		52,634	110,907	163,541	42,431	24,549	43,116	53,445		
1058	Pre-construction	31167453	IU Upgrades	98	98C	In-Line Inspection	I-104I L-177A MP 182.39-187.28 IU Upgrade	Humboldt Hill	Underground	5/10/2017	NO	5/26/2017		54,926	139,599	194,525	59,526	4,545	60,264	70,190		
1059	Pre-construction	31167595	IU Upgrades	98	98C	In-Line Inspection	I-099A L-138 IU Upgrade Launcher	Easton	TBD	6/10/2017		7/15/2017		53,073	(7,261)	45,812	6,234	0	35,454	4,124		
1060	Pre-construction	31167598	IU Upgrades	98	98C	In-Line Inspection	I-128C L-132 MP 46.59-51.53 IU Upgrade	San Francisco	Underground	6/27/2017		7/26/2017		36,006	132,257	168,263	50,592	15,103	3,110	99,459		
1061	Pre-construction	31167620	IU Upgrades	98	98C	In-Line Inspection	I-128B L-132 IU Upgrade Receiver	San Francisco	Underground	9/14/2017	TBD	10/4/2017		4,145	1,030,357	1,034,501	143,015	32,139	655,258	204,090		
1062	Pre-construction	31171665	IU Upgrades	98	98C	In-Line Inspection	I-125D L-300A MP 21.23A IU Upgrade	Topock	Snelson	3/11/2019	NO	4/8/2019		16,917	121,130	138,048	26,031	1,867	73,239	36,911		
1063	Pre-construction	31171666	IU Upgrades	98	98C	In-Line Inspection	I-125E L-300A MP 21.23-40.87 IU Upgrade	Essex	Snelson	1/22/2019	NO	2/19/2019		36,646	53,610	90,256	13,148	1,867	61,212	14,029		
1064	Pre-construction	31171667	IU Upgrades	98	98C	In-Line Inspection	I-126D L-300B MP 20.84 IU Upgrade	Topock	Snelson	3/11/2019	NO	4/8/2019		11,103	111,163	122,265	19,244	1,867	68,701	32,452		
1065	Pre-construction	31171668	IU Upgrades	98	98C	In-Line Inspection	I-126E L-300B MP 20.84-40.49 IU Upgrade	Essex	Snelson	3/11/2019	NO	4/8/2019		43,814	61,883	105,697	11,528	1,867	77,942	14,359		
1066	Pre-construction	31185443	IU Upgrades	98	98C	In-Line Inspection	I-106A DFM-0639-01 IU Upgrade Launcher	Sacramento	TBD	3/15/2017	NO	4/19/2017		4,797	206,295	211,092	39,502	15,981	109,712	45,897		
1067	Pre-construction	31185444	IU Upgrades	98	98C	In-Line Inspection	I-106B DFM-0639-01 Casing Crossing IU Upgrade	Sacramento	TBD	3/15/2017	NO	4/10/2017		3,511	350,939	354,450	75,416	0	139,581	139,453		
1068	Pre-construction	31185445	IU Upgrades	98	98C	In-Line Inspection	I-106E DFM-0639-01 IU Upgrade Receiver	Sacramento	TBD	6/15/2017	LNG	8/25/2017		159	66,099	66,259	15,253	1,004	20,520	29,482		
1069	Pre-construction	31193560	IU Upgrades	98	98C	In-Line Inspection	I-127B L-105A MP 42.91-52.01 IU Upgrade	Berkeley	TBD	TBD				182	280	462	247	0	0	215		
1070	Pre-construction	31196039	IU Upgrades	98	98C	In-Line Inspection	I-129B L-138 MP 43.42 IU Upgrade SE & NE Permanent Launcher Conversion	Easton	GT/GC	1/9/2017	NO	2/2/2017		3,500	655,964	659,464	96,017	249,869	113,562	200,016		
1071	Pre-construction	31206167	IU Upgrades	98	98C	In-Line Inspection	I-043G L-109 IU Upgrade Barred Tee Replacement	Milpitas	Underground	12/10/2016	NO	12/20/2016		3,598	74,732	77,969	26,759	116	11,077	40,018		
1072	Pre-construction	31218240	IU Upgrades	98	98C	In-Line Inspection	I-007F L-132 MP 43.63-46.59 IU Upgrade	South San Francisco	Underground	2/19/2019	NO	3/19/2019		0	85,221	85,221	44,632	0	130	40,459		
1073	Pre-construction	31222094	IU Upgrades	98	98C	In-Line Inspection	I-104K L-189 MP 1.71-1.72 Replacement 3, IU Upgrade	Eureka	Underground	5/10/2017	CNG	6/8/2017		0	164,126	164,126	46,877	10,644	45,354	61,251		
1074	Pre-construction	31232526	IU Upgrades	98	98C	In-Line Inspection	I-247 L-021D MP 19.3-30.32 IU Upgrade Emergent	Petaluma	TBD	TBD	TBD	TBD		0	15,403	15,403	4,430	0	0	10,974		
1075	Pre-construction	31235698	IU Upgrades	98	98C	In-Line Inspection	I-256 L-101 MP 44.52-44.58 & 44.59-44.60 IU Upgrade	San Francisco	Underground	2/20/2017	CNG	3/24/2017		0	19,719	19,719	6,425	0	0	13,294		
1076	Pre-construction	74000261	IU Upgrades	98	98C	In-Line Inspection	I-164 L-153 MP 19.77-28.77 IU Upgrade	San Leandro	TBD	TBD	TBD	TBD		155	9	165	135	0	0	30		
1077	Pre-construction	74000262	IU Upgrades	98	98C	In-Line Inspection	I-165 L-300A MP 159.33-203.02 IU Upgrade	Barstow	TBD	TBD	TBD	TBD		155	9	165	135	0	0	30		
1078	Pre-construction	74000263	IU Upgrades	98	98C	In-Line Inspection	I-166 L-300A MP 40.89-103.72 IU Upgrade	Needles	TBD	TBD	TBD	TBD		155	9	165	135	0	0	30		
1079	Pre-construction	74000264	IU Upgrades	98	98C	In-Line Inspection	I-167 L-300B MP 161.02-203.07 IU Upgrade	Barstow	TBD	TBD	TBD	TBD		311	18	329	270	0	0	59		
1080	Pre-construction	74000265	IU Upgrades	98	98C	In-Line Inspection	I-168 L-300B MP 40.49-103.5 IU Upgrade	Needles	TBD	TBD	TBD	TBD		311	18	329	270	0	0	59		
1081	Pre-construction	74000266	IU Upgrades	98	98C	In-Line Inspection	I-169 L-021G MP 0-20.83 IU Upgrade	Petaluma	TBD	TBD	TBD	TBD		311	18	329	270	0	0	59		
1082	Pre-construction	74000267	IU Upgrades	98	98C	In-Line Inspection	I-170 L-050A-1 MP 0-2.87 IU Upgrade	Marysville	TBD	TBD	TBD	TBD		389	23	412	338	0	0	74		
1083	Pre-construction	74000268	IU Upgrades	98	98C	In-Line Inspection	I-159 DFM-0813-01 MP 0-1.29 IU Upgrade	San Jose	TBD	TBD	TBD	TBD		5,149	(770)	4,480	2,952	0	1,007	920		
1084	Pre-construction	74000269	IU Upgrades	98	98C	In-Line Inspection	I-160 L-118A MP 53.88-60.45 IU Upgrade	Merced	TBD	TBD	TBD	TBD		37,008	803,175	840,180	84,390	0	19,169	797,615		
1085	Pre-construction	74000270	IU Upgrades	98	98C	In-Line Inspection	I-163 DFM-1603-01 MP 0-0.02-2.15 IU Upgrade	Manteca	TBD	TBD	TBD	TBD		1,285	76	1,361	1,106	0	0	256		
1086	Pre-construction	74000271	IU Upgrades	98	98C	In-Line Inspection	I-162 DFM-1615-01 MP 0.02-16.59 IU Upgrade	Ripon	TBD	TBD	TBD	TBD		9,967	181	10,148	1,013	0	8,532	602		
1087	Pre-construction	74000275	IU Upgrades	98	98C	In-Line Inspection	I-161 L-301F MP 0-0.00-7.94 IU Upgrade	Marina	TBD	TBD	TBD	TBD		3,829	324	4,153	2,095	0	1,160	898		
1088	Pre-construction	74002329	IU Upgrades	98	98C	In-Line Inspection	I-191 L-172A IU Upgrade	TBD	TBD	TBD	TBD	TBD		0	90,881	90,881	27,800	0	36,224	26,857		
1089	Pre-construction	74002330	IU Upgrades	98	98C	In-Line Inspection	I-192 L-191-1 IU Upgrade	TBD	TBD	TBD	TBD	TBD		0	51,162	51,162	17,948	0	24,530	8,685		
1090	Pre-construction	74002331	IU Upgrades	98	98C	In-Line Inspection	I-193 DFM-0617-06 IU Upgrade	TBD	TBD	TBD	TBD	TBD		0	190,366	190,366	25,356	0	104,268	60,742		
1091	Pre-construction	74002332	IU Upgrades	98	98C	In-Line Inspection	I-194 L-124C, L-202, DFM-1521-01 IU Upgrade	TBD	TBD	TBD	TBD	TBD		0	39,196	39,196	25,534	0	1,923	11,740		
1092	Pre-construction	74002333	IU Upgrades	98	98C	In-Line Inspection	I-195 L-021A, L-021C IU Upgrade	Napa	TBD	2/23/2021		3/24/2021		0	124,380	124,380	50,660	0	43,445	30,276		
1093	Pre-construction	74002334	IU Upgrades	98	98C	In-Line Inspection	I-196 L-301F IU Upgrade	TBD	TBD	TBD	TBD	TBD		0	57,927	57,927	24,497	0	19,947	13,483		
1094	Pre-construction	74002335	IU Upgrades	98	98C	In-Line Inspection	I-197 L-177A IU Upgrade	TBD	TBD	TBD	TBD	TBD		0	121,251	121,251	23,544	0	73,767	23,940		
1095	Pre-construction	74002336	IU Upgrades	98	98C	In-Line Inspection	I-198 DFM-1817-01 IU Upgrade	TBD	TBD	TBD	TBD	TBD		0	213,860	213,860	31,646	7,664	148,575	25,975		
1096	Pre-construction	74002337	IU Upgrades	98	98C	In-Line Inspection	I-199 L-126A IU Upgrade	TBD	TBD	TBD	TBD	TBD		0	121,620	121,620	31,775	0	62,647	27,198		
1097	Pre-construction	74002338	IU Upgrades	98	98C	In-Line Inspection	I-200 DFM-1609-01 MP 0-5.59 IU Upgrade	Stockton	TBD	5/3/2021		6/1/2021		0	41,235	41,235	27,821	0	1,228	12,186		
1098	Pre-construction	74002339	IU Upgrades	98	98C	In																

TABLE 11-1<sup>(a)</sup>  
TRANSMISSION PIPELINE PROJECT SUMMARIES  
(CONTINUED)

Line No	Construction Phase	Order Number	Program Description	SAP MWC	SAP MA <sup>(b)</sup>	Project Description	Project Name	City	Construction Contractor	Mobilization Date	CNG/LNG	Tie-in Date/EORO	Job Estimate Amount	Total Cost 2015 Actuals Full Year	Total Cost 2016 Actual YTD	Grand Total (2015 + 2016)	Labor Cost	Materials Cost	Contracts Cost	Other Cost	Variance to Budget (IE-Total Cost Inception to Date for Completed Projects)	Total Costs Inception to Date for Completed Projects
1121	Pre-construction	74003120	II Upgrades	98	98C	In-Line Inspection	I-226 L-021G MP 20.83 Install II Receiver	San Rafael	TBD	TBD		TBD		0	967	967	273	0	0	695		
1122	Pre-construction	74004025	II Upgrades	98	98C	In-Line Inspection	I-229 DFM-1402-01 MP 0.0-0.34 NT II PCFS Installation	San Francisco	TBD	TBD	TBD	TBD		0	165,932	165,932	34,196	78,425	8,606	44,705		
1123	Pre-construction	74004078	II Upgrades	98	98C	In-Line Inspection	I-231 DFM-0611-02 II Upgrade	TBD	TBD	TBD	TBD	TBD		0	10,803	10,803	5,863	0	2,416	2,525		
1124	Pre-construction	74004229	II Upgrades	98	98C	In-Line Inspection	I-234 L-021D-1 & L-021C II Upgrade	Napa	TBD	TBD	TBD	TBD		0	7,542	7,542	2,225	0	113	5,204		
1125	Pre-construction	74004782	II Upgrades	98	98C	In-Line Inspection	I-251 L-400 II Upgrade Receiver	TBD	TBD	TBD	TBD	TBD		0	20,319	20,319	7,559	0	0	12,761		
1126	Pre-construction	74004783	II Upgrades	98	98C	In-Line Inspection	I-236B L-401 MP 233.89 II Upgrade Launcher at Buckeye PLS	Dunnigan	TBD	3/8/2018	NO	4/5/2018		0	116,796	116,796	31,267	27,615	2,173	55,741		
1127	Pre-construction	74004784	II Upgrades	98	98C	In-Line Inspection	I-252 L-302W II Upgrade Launcher	TBD	TBD	TBD	TBD	TBD		0	1,488	1,488	546	0	0	941		
1128	Pre-construction	74004982	II Upgrades	98	98C	In-Line Inspection	I-236A L-401 MP 317.23 II Upgrade Receiver at Bethany Compressor Station	Byron	TBD	3/8/2018	NO	4/6/2018		0	158,227	158,227	41,889	23,845	2,444	90,050		
1129	Pre-construction	74005320	II Upgrades	98	98C	In-Line Inspection	I-257 L-109 MP 30.77-43.23 II Upgrade	Daly City	Underground	10/24/2016	NO	11/22/2016		0	104,911	104,911	49,061	0	2,952	52,898		
1131	Pre-construction	74006104	II Upgrades	98	98C	In-Line Inspection	I-266 DFM-1817-01 Receiver Rob Roy Jnct II Upgrade	TBD	TBD	TBD	TBD	TBD		0	2,860	2,860	836	0	0	2,024		
1131	Pre-construction	74006105	II Upgrades	98	98C	In-Line Inspection	I-267 DFM-1817-01 MP 0.0-0.84 II Upgrade	TBD	TBD	TBD	TBD	TBD		0	190	190	56	0	0	134		
1132	Pre-construction	74006705	II Upgrades	98	98C	In-Line Inspection	I-295 L-400 MP 0-24.72 II Upgrade	TBD	TBD	TBD	TBD	TBD		0	7,513	7,513	914	0	4,326	2,273		
1133	Pre-construction	74006706	II Upgrades	98	98C	In-Line Inspection	I-302 L-401 MP 149.19-197.81 II Upgrade	TBD	TBD	TBD	TBD	TBD		0	4,510	4,510	568	0	2,815	1,127		
1134	Pre-construction	74006707	II Upgrades	98	98C	In-Line Inspection	I-303 L-401 MP 197.81-233.89 II Upgrade	TBD	TBD	TBD	TBD	TBD		0	6,649	6,649	82	0	6,450	118		
1135	Pre-construction	74006708	II Upgrades	98	98C	In-Line Inspection	I-296 L-400 MP 142.6-149.19 II Upgrade	TBD	TBD	TBD	TBD	TBD		0	2,683	2,683	0	0	2,670	14		
1136	Pre-construction	74006709	II Upgrades	98	98C	In-Line Inspection	I-301 L-401 MP 0-24.66 II Upgrade	TBD	TBD	TBD	TBD	TBD		0	11,677	11,677	686	0	9,496	1,495		
1137	Pre-construction	74006743	II Upgrades	98	98C	In-Line Inspection	I-294 L-300B MP 40.46-103.51 II Upgrade	TBD	TBD	TBD	TBD	TBD		0	14,630	14,630	1,885	0	7,978	4,767		
1138	Pre-construction	74006744	II Upgrades	98	98C	In-Line Inspection	I-293 L-300A MP 40.87-103.72 II Upgrade	TBD	TBD	TBD	TBD	TBD		0	12,593	12,593	1,523	0	7,461	3,610		
1139	Pre-construction	74006920	II Upgrades	98	98C	In-Line Inspection	I-270 L-300B MP 161.02-203.07 II Upgrade	TBD	TBD	TBD	TBD	TBD		0	11,339	11,339	116	0	10,885	239		
1140	Pre-construction	74006921	II Upgrades	98	98C	In-Line Inspection	I-300 L-400 MP 281.59-298.84 II Upgrade	TBD	TBD	TBD	TBD	TBD		0	9,764	9,764	82	0	9,508	175		
1141	Pre-construction	74006922	II Upgrades	98	98C	In-Line Inspection	I-304 L-401 MP 24.66-82.37 II Upgrade	TBD	TBD	TBD	TBD	TBD		0	4,527	4,527	0	0	4,501	26		
1142	Pre-construction	74006923	II Upgrades	98	98C	In-Line Inspection	I-297 L-400 MP 24.72-82.38 II Upgrade	TBD	TBD	TBD	TBD	TBD		0	7,344	7,344	0	0	7,302	42		
1143	Pre-construction	74006924	II Upgrades	98	98C	In-Line Inspection	I-299 L-400 MP 197.85-233.87 II Upgrade	TBD	TBD	TBD	TBD	TBD		0	4,044	4,044	82	0	3,845	117		
1144	Pre-construction	74006925	II Upgrades	98	98C	In-Line Inspection	I-298 L-400 MP 149.19-197.85 II Upgrade	TBD	TBD	TBD	TBD	TBD		0	11,211	11,211	1,910	0	4,695	4,605		
1145	Pre-construction	74006965	II Upgrades	98	98C	In-Line Inspection	I-317 DFM-1881-01 MP 0-2.66 II Upgrade	TBD	TBD	TBD	TBD	TBD		0	1,871	1,871	142	0	1,387	341		
1146	Pre-construction	74007007	II Upgrades	98	98C	In-Line Inspection	I-312 L-131 MP 5.81-8.58 II Upgrade	TBD	TBD	TBD	TBD	TBD		0	2,042	2,042	0	0	2,035	7		
1147	Pre-construction	74007011	II Upgrades	98	98C	In-Line Inspection	I-316 DFM-1822-01 MP 0-3.37 II Upgrade	TBD	TBD	TBD	TBD	TBD		0	645	645	0	0	643	2		
1148	Pre-construction	74007016	II Upgrades	98	98C	In-Line Inspection	I-307 L-0617-06 MP 13.01-20.67 II Upgrade	TBD	TBD	TBD	TBD	TBD		0	239	239	71	0	0	168		
1149	Pre-construction	74007017	II Upgrades	98	98C	In-Line Inspection	I-323 L-302W MP 0-5.76 II Upgrade	TBD	TBD	TBD	TBD	TBD		0	239	239	71	0	0	168		
1150	Pre-construction	74007018	II Upgrades	98	98C	In-Line Inspection	I-264 L-0608-01 MP 0-5.63 II Upgrade	TBD	TBD	TBD	TBD	TBD		0	239	239	71	0	0	168		
1151	Pre-construction	74007019	II Upgrades	98	98C	In-Line Inspection	I-324 DFM-7206-01 MP 0-3.36 II Upgrade	TBD	TBD	TBD	TBD	TBD		0	239	239	71	0	0	168		
1152	Pre-construction	74007080	II Upgrades	98	98C	In-Line Inspection	I-320 L-301B MP 0-13.96 II Upgrade	TBD	TBD	TBD	TBD	TBD		0	3,808	3,808	71	0	3,557	180		
1153	Pre-construction	74007081	II Upgrades	98	98C	In-Line Inspection	I-321 L-301C MP 13.63-17.27 II Upgrade	TBD	TBD	TBD	TBD	TBD		0	239	239	71	0	0	168		
1154	Pre-construction	74007202	II Upgrades	98	98C	In-Line Inspection	I-1850 L-167 II Upgrade Wild Goose Meter Sta.	TBD	TBD	TBD	TBD	TBD		0	772	772	224	0	0	547		
1155	Pre-construction	74007203	II Upgrades	98	98C	In-Line Inspection	I-1856 L-167 II Upgrade Wild Goose Valve Lot	TBD	TBD	TBD	TBD	TBD		0	386	386	112	0	0	274		
1156	Pre-construction	74007205	II Upgrades	98	98C	In-Line Inspection	I-1850 L-167 II Upgrade Receiver Yuba City Holder	TBD	TBD	TBD	TBD	TBD		0	1,542	1,542	448	0	0	1,094		
1157	Pre-construction	74007242	II Upgrades	98	98C	In-Line Inspection	I-336 DFM-0833-01 MP 0.00-3.56 II Upgrade	TBD	TBD	TBD	TBD	TBD		0	162	162	48	0	0	114		
1158	Pre-construction	74007244	II Upgrades	98	98C	In-Line Inspection	I-347 DFM-2408-11 MP 3.57-8.66 II Upgrade	TBD	TBD	TBD	TBD	TBD		0	2,718	2,718	48	0	2,547	123		
1159	Pre-construction	74007245	II Upgrades	98	98C	In-Line Inspection	I-340 DFM-1812-13 MP 0.00-2.10 II Upgrade	TBD	TBD	TBD	TBD	TBD		0	2,097	2,097	48	0	1,928	121		
1160	Pre-construction	74007246	II Upgrades	98	98C	In-Line Inspection	I-349 L-301D MP 0.00-1.72 II Upgrade	TBD	TBD	TBD	TBD	TBD		0	162	162	48	0	0	114		
1161	Pre-construction	74007247	II Upgrades	98	98C	In-Line Inspection	I-345 L-002 MP 39.81-43.47 II Upgrade	TBD	TBD	TBD	TBD	TBD		0	162	162	48	0	0	114		
1162	Pre-construction	74007249	II Upgrades	98	98C	In-Line Inspection	I-350 L-310 MP 0.00-37.57 II Upgrade	TBD	TBD	TBD	TBD	TBD		0	368	368	0	0	367	1		
1163	Pre-construction	74007254	II Upgrades	98	98C	In-Line Inspection	I-346 L-200C7-3 MP 0.00-0.90 II Upgrade	TBD	TBD	TBD	TBD	TBD		0	138	138	0	0	138	0		
1164	Pre-construction	74007323	II Upgrades	98	98C	In-Line Inspection	I-335 L-057A MP 6.34-9.49 II Upgrade	TBD	TBD	TBD	TBD	TBD		0	162	162	48	0	0	114		
1165	Pre-construction	74007324	II Upgrades	98	98C	In-Line Inspection	I-337 DFM-0833-01 MP 4.23-6.06 II Upgrade	TBD	TBD	TBD	TBD	TBD		0	4,744	4,744	48	0	4,567	129		
1166	Pre-construction	74007325	II Upgrades	98	98C	In-Line Inspection	I-342 DFM-1815-02 MP 6.49-17.32 II Upgrade	TBD	TBD	TBD	TBD	TBD		0	4,482	4,482	48	0	4,305	128		
1167	Pre-construction	74007326	II Upgrades	98	98C	In-Line Inspection	I-341 DFM-1815-02 MP 4.08-6.49 II Upgrade	TBD	TBD	TBD	TBD	TBD		0	162	162	48	0	0	114		
1168	Pre-construction	74007385	II Upgrades	98	98C	In-Line Inspection	I-176A L-134A & L-307A/II Upgrade Launcher & Receiver at Arbos Station	TBD	TBD	4/1/2019		4/29/2019		0	7,187	7,187	2,979	0	0	4,208		
1169	Pre-construction	74007386	II Upgrades	98	98C	In-Line Inspection	I-176B L-134A II Upgrade Receiver at Herndon Station	TBD	TBD	4/1/2019		4/29/2019		0	8,556	8,556	3,317	0	0	5,239		
1170	Pre-construction	74007543	II Upgrades	98	98C	In-Line Inspection	I-052C SPS/L-191 MP 3.86 II Upgrade Replace 30" Ball Valve	Antioch	ARB	10/15/2016	TBD	10/28/2016		0	7,766	7,766	2,257	0	0	5,509		
1171	Pre-construction	74007544	II Upgrades	98	98C	In-Line Inspection	I-178B DFM-7226-01 II Upgrade Receiver at Burneyville Rd Station	TBD	TBD	5/20/2020	TBD	6/18/2020		0	233	233	210	0	0	23		
1172	Pre-construction	74007545	II Upgrades	98	98C	In-Line Inspection	I-178C DFM-7226-01 MP 0.00-3.86 II Upgrade	TBD	TBD	7/13/2017	TBD	8/11/2017		0	467	467	420	0	0	46		
1173	Pre-construction	74007546	II Upgrades	98	98C	In-Line Inspection	I-178D DFM-7226-02 MP 0.00-4.60 II Upgrade	TBD	TBD	7/13/2017	TBD	8/11/2017		0	39	39	35	0	0	4		
1174	Pre-construction	74007547	II Upgrades	98	98C	In-Line Inspection	I-178E DFM-7226-36 MP 0.05-2.33 II Upgrade	TBD	TBD	7/13/2017	TBD	8/11/2017		0	428	428	385	0	0	42		
1175	Pre-construction	74007620	II Upgrades	98	98C	In-Line Inspection	I-352B L-307A, L-307B MP 0-12.05 II Upgrade	TBD	TBD	4/1/2019	TBD	4/29/2019		0	233	233	210	0	0	23		
1176	Pre-construction	74007621	II Upgrades	98	98C	In-Line Inspection	I-352C L-307A, L-307B MP 8.63-16.92 II Upgrade	TBD	TBD	4/1/2019	TBD	4/29/2019		0	1,400	1,400	1,261	0	0	139		
1177	Pre-construction	74007622	II Upgrades	98	98C	In-Line Inspection	I-176C L-134A MP 0-27.04 II Upgrade	TBD	TBD	4/1/2019	TBD	4/29/2019		0	4,112	4,112	2,738	0	0	1,374		
1178	Pre-construction	42794008	II Direct Exam and Repair	HP	HPI	TIMP Projects	RT-873 L-131 MP 45.98 Sleeve Repair (ID-69-2)	Fremont	TBD	TBD		TBD		0	0	0	0	0	0	0		
1179	Pre-construction	42796087	II Direct Exam and Repair	HP	HPI	TIMP Projects	RT-872 L-131 MP 27.76 Sleeve Repair (ID-69-1)	Livermore	TBD	TBD		TBD		0	0	0	0	0	0	0		
1180	Pre-construction	42796095	II Direct Exam and Repair	HP	HPI	TIMP Projects	RT-874 L-303 MP 4.32 Sleeve Repair (ID-33-1)	Antioch	TBD	12/5/2016		12/14/2016		0	140	140	0	0	0	0		
1181	Pre-construction	42426949	II Direct Exam and Repair	HP	HPI	TIMP Projects	RT-628 L-316-2 MP 1.16 II Cut Out	Brentwood	ARB	5/1/2017	CNG	5/16/2017	29,890	97,022	126,911	94,748	19	3,328	28,816			
1182	Pre-construction	42667142	II Direct Exam and Repair	HP	HPI	TIMP Projects	RT-771 L-153 MP 5.46 II Cut Out (ID-45-2)	Fremont	ARB													



TABLE 11-1<sup>(a)</sup>  
TRANSMISSION PIPELINE PROJECT SUMMARIES  
(CONTINUED)

Line No	Construction Phase	Order Number	Program Description	SAP MWC	SAP MA <sup>(b)</sup>	Project Description	Project Name	City	Construction Contractor	Mobilization Date	CNG/LNG	Tie-in Date/ERO	Job Estimate Amount	Total Cost 2015 Actuals Full Year	Total Cost 2016 Actual YTD	Grand Total (2015 + 2016)	Labor Cost	Materials Cost	Contracts Cost	Other Cost	Variance to Budget (IE-Total Cost Inception to Date for Completed Projects)	Total Costs Inception to Date for Completed Projects
1200	Pre-construction	42485829	Hydrostatic Testing - IM	HP	HPF	TIMP Projects	T-1118 L-300A MP 150.33-150.338 Test	Hinkley	Snelson	4/19/2017	TBD	5/25/2017		31,595	9,832	41,427	17,316	0	21,691	2,420		
1201	Pre-construction	42541510	Hydrostatic Testing - IM	HP	HPF	TIMP Projects	T-10268 DFM-0613-01 MP 3.29-3.524 Test	Sacramento	GT/GC	8/9/2018	CNG-<25%	9/17/2018		17,133	48,504	65,636	45,724	0	5,096	14,817		853,832
1202	Pre-construction	42554050	Hydrostatic Testing - IM	HP	HPF	TIMP Projects	T-1120 L-167 MP 26.99-28.03 Test	Yuba City	Barnard	5/1/2017	TBD	6/21/2017		105	19,723	19,828	15,633	0	0	4,195		
1203	Pre-construction	42562156	Hydrostatic Testing - IM	HP	HPF	TIMP Projects	T-1121 L-105N-5_1 MP 36.47-36.471 Test	Oakland	ARB	TBD			3,497	74,731	78,229	44,206	0	4,873	29,150			
1204	Pre-construction	42576153	ILI Direct Exam and Repair	HP	HPI	TIMP Projects	D-171A L-1818 MP 10.39 Direct Examination and Repair ID-37-1	Pajaro	Mears	3/13/2017		3/27/2017		0	27,482	27,482	16,893	0	8,239	2,350		
1205	Pre-construction	42591803	Traditional ILI Runs	HP	HPB	TIMP Projects	I-141 DFM-0617-03 MP 0.00-20.67, DFM-0617-06, DFM-0617-08, DFM-0617-07 ILI Piggling & Analysis	Sacramento	TBD	5/1/2017	NO	7/22/2017		17,834	863,901	881,735	160,242	59,346	469,447	192,699		1,735,465
1206	Pre-construction	42596039	ILI Direct Exam and Repair	HP	HPI	TIMP Projects	D-172B L-107 MP 32.73 Direct Examination and Repair ID-38-2	Fremont	Mears	6/20/2017		6/29/2017		0	14,783	14,783	12,285	0	1,137	1,361		1,150,493
1207	Pre-construction	42671547	ILI Direct Exam and Repair	HP	HPI	TIMP Projects	D-591B L-131 MP 45.98 ILI Immediate ID-69-2	Fremont	Mears	10/12/2016		10/21/2016		0	70,069	70,069	37,378	0	10,156	22,536		
1208	Pre-construction	42671550	ILI Direct Exam and Repair	HP	HPI	TIMP Projects	D-606G L-300B MP 427.27 ILI Direct Exam & Repair ID-71-7	Palmdale	TBD	10/17/2016		10/31/2016		0	17,906	17,906	8,286	0	0	9,620		
1209	Pre-construction	42778387	ILI Direct Exam and Repair	HP	HPI	TIMP Projects	D-599A DFM-0617-06 MP 11.77 ILI Direct Exam & Repair ID-70-1	Folsom	Teichert	11/7/2016		11/21/2016		0	9,366	9,366	5,906	0	0	3,460		
1210	Pre-construction	84000605	Hydrostatic Testing - IM	HP	HPF	TIMP Projects	T-1023A DFM-7224-01 MP 0-0.95 Test	Modesto	Snelson	1/30/2020	TBD	3/24/2020		150,203	10,290	160,493	7,965	0	573	151,955		
1211	Pre-construction	84000741	Traditional ILI Runs	HP	HPB	TIMP Projects	I-212 L-105N MP 27.38-28.13 Non-Traditional ILI	Oakland	GC/Mears	3/10/2017	NO	6/1/2017		0	35,669	35,669	16,908	0	1,325	17,436		
1212	Pre-construction	84000742	Traditional ILI Runs	HP	HPB	TIMP Projects	I-213 DFM-8805-03 MP 0-5.4 Non-Traditional ILI	Mountain View	TBD	TBD	NO	TBD		0	4,112	4,112	3,255	0	0	857		
1213	Pre-construction	84000744	Traditional ILI Runs	HP	HPB	TIMP Projects	I-215 DFM-0140-01 MP 0-0.86 Non-Traditional ILI	Berkeley	ARB	12/7/2016	CNG	1/13/2017		0	31,135	31,135	12,532	0	7,948	10,655		
1214	Pre-construction	84000747	Hydrostatic Testing - IM	HP	HPF	TIMP Projects	T-1124 L-021F MP 0.00-2.13 Test	Petaluma	Barnard	TBD		TBD		0	50,531	50,531	4,071	0	45,473	987		
1215	Pre-construction	84000761	Hydrostatic Testing - IM	HP	HPF	TIMP Projects	T-1125 DFM-1217-01 MP 3.45-3.85 Test	Fresno	GT/GC	10/5/2016	CNG-<25%	11/8/2016		0	151,691	151,691	31,932	0	99,520	20,240		
1216	Pre-construction	84000763	Hydrostatic Testing - IM	HP	HPF	TIMP Projects	T-1126 GCU575838 MP 0.00-0.03 Test	Stockton	Underground	TBD		TBD		0	22,494	22,494	1,894	0	18,341	1,259		
1217	Pre-construction	84000764	Hydrostatic Testing - IM	HP	HPF	TIMP Projects	T-1127 L-215 MP 19.46-20.08 Test	Turlock	Underground	3/27/2018	NO	5/2/2018		0	26,596	26,596	2,437	0	23,408	751		
1218	Pre-construction	84000765	Hydrostatic Testing - IM	HP	HPF	TIMP Projects	T-1128 L-105N MP 33-33.37 Test	Oakland	ARB	3/14/2018	TBD	7/31/2018		0	44,083	44,083	3,929	0	38,448	1,707		
1219	Pre-construction	84000766	Hydrostatic Testing - IM	HP	HPF	TIMP Projects	T-1129 L-105N MP 34.5-35.01 Test	Oakland	ARB	3/14/2018	TBD	7/31/2018		0	68,874	68,874	4,390	0	62,638	1,846		
1220	Pre-construction	84000767	Hydrostatic Testing - IM	HP	HPF	TIMP Projects	T-1130 DFM-3012-01 MP 0.027-0.172 Test	Pittsburg	ARB	2/23/2017	TBD	4/19/2017		0	44,454	44,454	7,876	0	34,463	2,115		
1221	Pre-construction	84000768	Hydrostatic Testing - IM	HP	HPF	TIMP Projects	T-1131 DFM-0123-01 MP 0.007-0.071 Test	Pinole	ARB	TBD	TBD	TBD		0	53,832	53,832	4,397	0	47,370	2,064		
1222	Pre-construction	84000769	Hydrostatic Testing - IM	HP	HPF	TIMP Projects	T-1132 L-105C MP 1.793-2.03 Test	Oakland	ARB	3/14/2018	TBD	7/31/2018		0	53,127	53,127	2,969	0	49,125	1,033		
1223	Pre-construction	84000770	Hydrostatic Testing - IM	HP	HPF	TIMP Projects	T-1133 DFM-0405-01 MP 3-3 Test	Napa	ARB	TBD	TBD	TBD		0	35,731	35,731	2,938	0	31,873	920		
1224	Pre-construction	84000771	Hydrostatic Testing - IM	HP	HPF	TIMP Projects	T-222-13 DFM-0405-01 MP 14.97-17.55 Test	Napa	ARB	5/8/2019	TBD	5/29/2019		0	148,822	148,822	37,549	0	102,604	8,668		
1225	Pre-construction	84000880	Hydrostatic Testing - IM	HP	HPF	TIMP Projects	T-1136 L-131 MP 8.03-8.13 Test	Oakley	ARB	TBD	TBD	TBD		0	11,951	11,951	791	0	10,319	840		
1226	Pre-construction	84000881	Hydrostatic Testing - IM	HP	HPF	TIMP Projects	T-1137 L-220 MP 32.9-34.35 Test	Woodland	Barnard	TBD	TBD	TBD		0	4,419	4,419	749	0	3,093	577		
1227	Pre-construction	84000882	Hydrostatic Testing - IM	HP	HPF	TIMP Projects	T-1138 L-316-3 MP 0-2.44, L-316F MP 0.46-1 Test	Knightsen	Underground	5/1/2017	NO	6/21/2017		0	38,493	38,493	2,285	0	35,058	1,150		
1228	Pre-construction	84000883	Hydrostatic Testing - IM	HP	HPF	TIMP Projects	T-1139A DCM510030 MP 0.468-0.473 Test	Sacramento	Barnard	TBD	TBD	TBD		0	62,278	62,278	2,003	0	58,527	1,748		
1229	Pre-construction	84000885	Hydrostatic Testing - IM	HP	HPF	TIMP Projects	T-1150 L-103 MP 25.3-25.46 Test	Salinas	TBD	TBD	TBD	TBD		0	23,559	23,559	2,623	0	19,226	1,710		
1230	Pre-construction	84000886	Hydrostatic Testing - IM	HP	HPF	TIMP Projects	T-1140 L-109 MP 45.83-46 Test	San Francisco	TBD	TBD	TBD	TBD		0	8,264	8,264	151	0	8,089	24		
1231	Pre-construction	84000900	Hydrostatic Testing - IM	HP	HPF	TIMP Projects	T-1151 L-119B MP 0.00-0.837 Test	Sacramento	TBD	5/12/2017	TBD	6/27/2017		0	34,645	34,645	22,049	0	265	12,331		
1232	Pre-construction	84000901	Hydrostatic Testing - IM	HP	HPF	TIMP Projects	T-1144 L-301B MP 7.92-13.96 Test	Salinas	Underground	TBD	TBD	TBD		0	87,021	87,021	39,652	485	700	46,184		
1233	Pre-construction	84000902	Hydrostatic Testing - IM	HP	HPF	TIMP Projects	T-1145 L-109 MP 0.00 Test	Milpitas	ARB	TBD	TBD	TBD		0	10,088	10,088	4,505	0	0	5,582		
1234	Pre-construction	84000904	Hydrostatic Testing - IM	HP	HPF	TIMP Projects	T-1161 DFM-1615-01 & DFM-7224-01 Test	Modesto	Underground	TBD	TBD	TBD		0	11,351	11,351	5,086	0	0	6,266		
1235	Pre-construction	84000907	Hydrostatic Testing - IM	HP	HPF	TIMP Projects	T-1148 DCM51755 MP 0.00-0.16 Test	Lathrop	Underground	TBD	TBD	TBD		0	66,347	66,347	41,593	0	3,016	21,738		
1236	Pre-construction	84001160	Hydrostatic Testing - IM	HP	HPF	TIMP Projects	T-117-12 L-300B MP 55.827-354.002 Test	Kettlemann City	Snelson	8/27/2018	TBD	10/18/2018		0	11,131	11,131	5,416	0	0	5,714		
1237	Pre-construction	84001161	Hydrostatic Testing - IM	HP	HPF	TIMP Projects	T-1157 DFM-1205-02 MP 1.205-1.215 Test	Fresno	Snelson	TBD	TBD	TBD		0	35,368	35,368	15,939	0	0	19,429		
1238	Pre-construction	84001165	Hydrostatic Testing - IM	HP	HPF	TIMP Projects	T-1163 DFM-0611-07 MP 0.12-0.49 Test	Sacramento	Barnard	TBD	TBD	TBD		0	1,114	1,114	501	0	0	613		
1239	Pre-construction	84001166	Hydrostatic Testing - IM	HP	HPF	TIMP Projects	T-1162 L-300A MP 483.74-484.19 Test	Coyote	GT/GC	4/17/2017	TBD	5/18/2017		0	89,347	89,347	55,296	0	4,200	29,851		
1240	Pre-construction	84001243	Traditional ILI Runs	HP	HPB	TIMP Projects	I-250 L-021C/D/E MP 31.84-53.12 ILI Piggling & Analysis	Santa Rosa	TBD	8/1/2017	TBD	10/27/2017		0	606	606	274	0	0	332		
1241	Pre-construction	84001320	Hydrostatic Testing - IM	HP	HPF	TIMP Projects	T-1164 DFM-2405-01 MP 0.3783-0.3788 Test	Fremont	Underground	10/19/2016	CNG	11/3/2016		0	49,889	49,889	21,349	35	12,936	15,569		
1242	Pre-construction	84001340	Traditional ILI Runs	HP	HPB	TIMP Projects	I-1050 DFM-2408-05 MP 0.15-5.95 & DFM-2480-11 MP 0-3.57 ILI Piggling & Analysis	Dublin	TBD	TBD	TBD	TBD		0	27	27	12	0	0	15		
1243	Pre-construction	84001341	Traditional ILI Runs	HP	HPB	TIMP Projects	I-237 L-021E MP 53.12-64.36 ILI Re-Inspection	Santa Rosa	GT/GC	12/2/2016	NO	2/4/2017		0	26,066	26,066	12,548	0	0	13,519		
1244	Pre-construction	84001343	Traditional ILI Runs	HP	HPB	TIMP Projects	I-044G L-402 MP 0.00-28.60 ILI Piggling & Analysis	Redding	TBD	6/28/2017	TBD	9/6/2017		0	547	547	240	0	0	307		
1245	Pre-construction	84001345	Traditional ILI Runs	HP	HPB	TIMP Projects	I-104L L-177A MP 163.04-192.25 & L-189 MP 0-1.89 ILI Piggling & Analysis	TBD	TBD	7/5/2017	TBD	7/22/2017		0	168	168	25	0	113	30		
1246	Pre-construction	84001346	Traditional ILI Runs	HP	HPB	TIMP Projects	I-110E L-119C MP 0.0-6.69 ILI Piggling & Analysis	North Highlands	TBD	11/15/2016	TBD	3/4/2017		0	7,327	7,327	3,553	0	0	3,774		
1247	Pre-construction	84001347	Traditional ILI Runs	HP	HPB	TIMP Projects	I-103F L-173 MP 3.22-17.56 ILI Piggling & Analysis	TBD	TBD	TBD	TBD	TBD		0	27	27	12	0	0	15		
1248	Pre-construction	84001348	Traditional ILI Runs	HP	HPB	TIMP Projects	I-100G L-142N MP 8.57-14.05 ILI Piggling & Analysis	Bakersfield	Snelson	1/25/2017	TBD	11/6/2017		0	2,601	2,601	1,330	0	0	1,272		
1249	Pre-construction	84001349	Traditional ILI Runs	HP	HPB	TIMP Projects	I-106F DFM-0639-01 MP 0.01-1.85 ILI Piggling & Analysis	Sacramento	TBD	TBD	TBD	TBD		0	27	27	12	0	0	15		
1250	Pre-construction	84001350	Traditional ILI Runs	HP	HPB	TIMP Projects	I-113E DFM-2403-12 MP 0.00-2.88 ILI Piggling & Analysis	Fremont	TBD	7/13/2017	TBD	9/18/2017		0	3,959	3,959	1,435	0	750	1,773		
1251	Pre-construction	84001351	Traditional ILI Runs	HP	HPB	TIMP Projects	I-101L L-300A MP 203.02-256.21 ILI Piggling & Analysis	Tehachapi	TBD	TBD	TBD	TBD		0	27	27	12	0	0	15		
1252	Pre-construction	84001352	Traditional ILI Runs	HP	HPB	TIMP Projects	I-102L L-300B MP 203.07-256.64 ILI Piggling & Analysis	Tehachapi	TBD	TBD	TBD	TBD		0	27	27	12	0	0	15		
1253	Pre-construction	84001355	Traditional ILI Runs	HP	HPB	TIMP Projects	I-099F L-138 MP 38.58-43.40 ILI Piggling & Analysis	Fresno	TBD	3/8/2017	LNG	4/17/2017		0	1,263	1,263	573	0	0	690		
1254	Pre-construction	84001356	Traditional ILI Runs	HP	HPB	TIMP Projects	I-115E DFM-1202-16 MP 0.00-2.59 ILI Piggling & Analysis	Fresno	TBD	4/13/2017	TBD	5/13/2017		0	686	686	311	0	0	375		
1255	Pre-construction	84001358	Traditional ILI Runs	HP	HPB	TIMP Projects	I-241 L-191/SP5 MP 0.11-10.6 Piggling & Analysis	Pittsburg	TBD	12/15/2016	TBD	10/1/2018		0	16,289	16,289	7,506	0	0	8,783	</	

**TABLE 11-1<sup>(a)</sup>**  
**TRANSMISSION PIPELINE PROJECT SUMMARIES**  
**(CONTINUED)**

Line No	Construction Phase	Order Number	Program Description	SAP MWC	SAP MA <sup>(b)</sup>	Project Description	Project Name	City	Construction Contractor	Mobilization Date	CNG/LNG	Tie-in Date/EORO	Job Estimate Amount	Total Cost 2015 Actuals Full Year	Total Cost 2016 Actual YTD	Grand Total (2015 + 2016)	Labor Cost	Materials Cost	Contracts Cost	Other Cost	Variance to Budget (E-Total Cost Inception to Date for Completed Projects)	Total Costs Inception to Date for Completed Projects
1278	Pre-construction	84002301	Traditional LI Runs	HP	HPB	TIMP Projects	I-354 8"X10" GEO and MFL Tool Development LI Piggling & Analysis	TBD	TBD	TBD	TBD	TBD		0	417	417	417	214	0	0	204	
1279	Pre-construction	84002400	Hydrostatic Testing - IM	HP	HPF	TIMP Projects	T-1264 L-215 MP 4.89-00-6.65.00 Test	TBD	TBD	4/14/2017	TBD	6/2/2017		0	726	726	726	452	0	0	273	
1280	Pre-construction	84002401	Hydrostatic Testing - IM	HP	HPF	TIMP Projects	T-1265 L-215 MP 6.65-00-8.52.00 Test	TBD	TBD	3/24/2017	TBD	5/5/2017		0	1,412	1,412	1,412	753	0	0	659	
1281	Pre-construction	84002402	Hydrostatic Testing - IM	HP	HPF	TIMP Projects	T-1266 L-215 MP 8.52-00-14.56.00 Test	TBD	TBD	3/6/2017	TBD	4/21/2017		0	1,643	1,643	1,643	854	0	0	789	
1282	Pre-construction	84002403	Hydrostatic Testing - IM	HP	HPF	TIMP Projects	T-1267 L-215 MP 14.56-00-17.1.00 Test	TBD	TBD	2/15/2017	TBD	3/31/2017		0	4,167	4,167	4,167	1,960	0	0	2,207	
1283	Pre-construction	84002404	Hydrostatic Testing - IM	HP	HPF	TIMP Projects	T-1268 L-215 MP 17.1-00-20.08.00 Test	TBD	TBD	1/23/2017	TBD	3/10/2017		0	4,282	4,282	4,282	2,010	0	0	2,271	
1284	Pre-construction	42124696	Hydrostatic Tstng D.11-06-017	JT	JTC	Strength Test	T-1043 L-103 MP 10.33-15.634 Test	Salinas	Snelson	TBD	TBD	TBD		26,496	2,264	28,760	28,751	0	(113)	123		
1285	Pre-construction	42124783	Hydrostatic Tstng D.11-06-017	JT	JTC	Strength Test	T-10478 L-114 MP 18.62-20.68 Test	Brentwood	ARB	1/26/2017	TBD	2/20/2017		109,476	79,823	189,299	134,518	0	22,902	31,880		
1286	Pre-construction	42191289	Hydrostatic Tstng D.11-06-017	JT	JTC	Strength Test	T-1097 DFM-0405-01 MP 20.97-28.22 Test	St. Helena	ARB	TBD	LNG	TBD		13,610	2,955	16,565	16,285	0	0	280		
1287	Pre-construction	42482243	Hydrostatic Tstng D.11-06-017	JT	JTC	Strength Test	T-1155 DFM-0213-02 MP 0.91-4.27 Test	Pacificia	Underground	TBD	TBD	TBD		0	5,293	5,293	687	0	4,238	369		
1288	Pre-construction	42575992	Hydrostatic Tstng D.11-06-017	JT	JTC	Strength Test	T-1195 DFM-1603-01 MP 2.14-3.20 Test	Lathrop	GT/GC	5/8/2017	TBD	8/15/2017		4,754	33,483	38,236	30,968	0	0	7,268		
1289	Pre-construction	42671641	Hydrostatic Tstng D.11-06-017	JT	JTC	Strength Test	RT-802 GCUST7728 MP 0.00-0.023 Replace	Modesto	TBD	2/27/2019		3/13/2019		0	11,590	11,590	1,703	0	9,725	162		
1290	Pre-construction	42671642	Hydrostatic Tstng D.11-06-017	JT	JTC	Strength Test	RT-803 GCUST5943 MP 0.188-0.220 Replace	Merced	TBD	4/18/2019		5/2/2019		0	11,311	11,311	477	0	10,672	162		
1291	Pre-construction	42671643	Hydrostatic Tstng D.11-06-017	JT	JTC	Strength Test	RT-808 DFD58219 0.001-0.005 Replace	Elk Grove	TBD	5/16/2020		6/2/2020		0	4,814	4,814	302	0	4,350	162		
1292	Pre-construction	42671644	Hydrostatic Tstng D.11-06-017	JT	JTC	Strength Test	RT-809 DFM-0602-01 MP 0.00-0.10 Replace	Fairfield	TBD	2/26/2020		3/11/2020		0	6,026	6,026	302	0	5,562	162		
1293	Pre-construction	42671645	Hydrostatic Tstng D.11-06-017	JT	JTC	Strength Test	RT-804 L-3318 MP 4.638-5.313 Replace	Los Banos	TBD	TBD	TBD		0	2,994	2,994	316	0	2,509	169			
1294	Pre-construction	42671646	Hydrostatic Tstng D.11-06-017	JT	JTC	Strength Test	RT-810 DREG4327 MP 1.727-1.738 Replace	Sacramento	TBD	5/16/2020		6/2/2020		0	5,265	5,265	302	0	4,801	162		
1295	Pre-construction	42671647	Hydrostatic Tstng D.11-06-017	JT	JTC	Strength Test	RT-797 DFM-1208-01 MP 0.00-0.0001 Replace	Fresno	TBD	2/19/2020		3/4/2020		0	14,264	14,264	302	0	13,801	162		
1296	Pre-construction	42671648	Hydrostatic Tstng D.11-06-017	JT	JTC	Strength Test	RT-774 DFM-3019-01 MP 0.354-0.43 Replace	Martinez	TBD	2/15/2020		3/3/2020		0	10,431	10,431	577	0	9,527	327		
1297	Pre-construction	42671649	Hydrostatic Tstng D.11-06-017	JT	JTC	Strength Test	RT-780 L-0214 MP 2.74 Replace	Vallejo	TBD	2/27/2019		3/13/2019		0	5,297	5,297	727	0	4,367	203		
1298	Pre-construction	42671650	Hydrostatic Tstng D.11-06-017	JT	JTC	Strength Test	RT-775 L-316-23 MP 0.10-0.12 Replace	Oakley	TBD	2/16/2019		3/2/2019		0	7,651	7,651	879	0	6,283	489		
1299	Pre-construction	42671651	Hydrostatic Tstng D.11-06-017	JT	JTC	Strength Test	RT-781 DREG6912 MP 0.003-0.010 Replace	Vallejo	TBD	2/27/2019		3/13/2019		0	5,281	5,281	991	0	3,945	345		
1300	Pre-construction	42671652	Hydrostatic Tstng D.11-06-017	JT	JTC	Strength Test	RT-794 L-153-7 MP 0.794-0.798 Replace	Fremont	TBD	TBD	TBD		0	464	464	302	0	0	162			
1301	Pre-construction	42671653	Hydrostatic Tstng D.11-06-017	JT	JTC	Strength Test	RT-811 STU810814 MP 0.00-0.0004 Replace	Woodland	TBD	2/26/2020		3/11/2020		0	4,936	4,936	302	0	4,472	162		
1302	Pre-construction	42671654	Hydrostatic Tstng D.11-06-017	JT	JTC	Strength Test	RT-799 DREG4312 MP 0.00-0.004 Replace	Stockton	TBD	2/27/2019		3/13/2019		0	4,832	4,832	302	0	4,368	162		
1303	Pre-construction	42671655	Hydrostatic Tstng D.11-06-017	JT	JTC	Strength Test	RT-793 DREG4873 MP 0.03 Replace	San Leandro	TBD	2/27/2019		3/13/2019		0	9,172	9,172	302	0	8,709	162		
1304	Pre-construction	42671656	Hydrostatic Tstng D.11-06-017	JT	JTC	Strength Test	RT-785 GCUST5872 MP 0.0798-0.80 Replace	Soledad	TBD	1/18/2019	NO	2/2/2019		0	8,069	8,069	462	0	7,472	135		
1305	Pre-construction	42671657	Hydrostatic Tstng D.11-06-017	JT	JTC	Strength Test	RT-805 GCUST5950 MP 0.00 Replace	Crows Landing	TBD	2/27/2019		3/13/2019		0	7,060	7,060	302	0	6,597	162		
1306	Pre-construction	42676649	Hydrostatic Tstng D.11-06-017	JT	JTC	Strength Test	RT-776 STU814005 MP 0.00-0.002 Replace	Oakley	TBD	2/27/2019		3/13/2019		0	6,679	6,679	602	0	5,736	340		
1307	Pre-construction	42676650	Hydrostatic Tstng D.11-06-017	JT	JTC	Strength Test	RT-777 DREG4812 MP 0.00-0.0066 Replace	Hopland	TBD	2/27/2020		3/13/2020		0	6,435	6,435	867	0	5,253	315		
1308	Pre-construction	42676651	Hydrostatic Tstng D.11-06-017	JT	JTC	Strength Test	RT-791 DREG4194 MP 0.00 Replace	Mountain View	TBD	6/18/2019	CNG	7/2/2019		0	9,966	9,966	302	0	9,503	162		
1309	Pre-construction	42676653	Hydrostatic Tstng D.11-06-017	JT	JTC	Strength Test	RT-798 DCUST1352 MP 0.00 Replace	Fresno	TBD	2/19/2020		3/4/2020		0	7,669	7,669	302	0	7,205	162		
1310	Pre-construction	42758301	Hydrostatic Tstng D.11-06-017	JT	JTC	Strength Test	D-5980 DFM-2403-01 MP 5.303 Transmission Dig TD16-01-4	Fremont	ARB	10/24/2016		11/7/2016		0	18,463	18,463	15,952	0	0	2,511		
1311	Pre-construction	84001000	Hydrostatic Tstng D.11-06-017	JT	JTC	Strength Test	T-1143 L-109 MP 29.6-30.12 Test	San Mateo	ARB	7/24/2017	TBD	9/14/2017		0	64,964	64,964	49,944	40	2,905	12,075		
1312	Pre-construction	84001420	Hydrostatic Tstng D.11-06-017	JT	JTC	Strength Test	T-1152 DFM-7203-01 MP 0.6-2.7 Test	Firebaugh	GT/GC	10/3/2016	LNG >50%	12/17/2016		0	149,992	149,992	33,283	0	104,523	12,186		
1313	Pre-construction	84001440	Hydrostatic Tstng D.11-06-017	JT	JTC	Strength Test	T-1167 L-177A MP 88.60-88.84 Test	Shasta Lake	TBD	TBD	TBD		0	785	785	502	0	0	283			
1314	Pre-construction	84001441	Hydrostatic Tstng D.11-06-017	JT	JTC	Strength Test	T-1168 DFM-0604-24 MP 0.00-0.0004 Test	Fairfield	TBD	TBD	TBD		0	832	832	578	0	0	254			
1315	Pre-construction	84001461	Hydrostatic Tstng D.11-06-017	JT	JTC	Strength Test	T-1169 L-177A MP 77.501-78.410 Test	TBD	TBD	TBD	TBD		0	1,036	1,036	665	0	0	371			
1316	Pre-construction	84001462	Hydrostatic Tstng D.11-06-017	JT	JTC	Strength Test	T-1170 GCUST5815 MP 0.076-0.052 Test	Santa Clara	TBD	TBD	TBD		0	1,156	1,156	849	0	0	308			
1317	Pre-construction	84001463	Hydrostatic Tstng D.11-06-017	JT	JTC	Strength Test	T-1171 L-108 MP 6.208-6.250, BD124 Test	Tracy	TBD	5/17/2017	TBD	6/28/2017		0	1,436	1,436	1,205	0	0	231		
1318	Pre-construction	84001464	Hydrostatic Tstng D.11-06-017	JT	JTC	Strength Test	T-1172 L-197A MP 31.2295-32.2405 Test	Valley Springs	Snelson	8/1/2019	TBD	9/18/2019		0	27,723	27,723	17,665	0	952	9,106		
1319	Pre-construction	84001465	Hydrostatic Tstng D.11-06-017	JT	JTC	Strength Test	T-1173 DFM-1613-05 MP 0.0056-0.1717 Test	Stockton	TBD	TBD	TBD		0	945	945	603	0	0	342			
1320	Pre-construction	84001500	Hydrostatic Tstng D.11-06-017	JT	JTC	Strength Test	T-1185 L-151 MP 10.990-11.213 Test	Chico	TBD	TBD	TBD		0	789	789	512	0	0	277			
1321	Pre-construction	84002080	Hydrostatic Tstng D.11-06-017	JT	JTC	Strength Test	T-1222 L-300A MP 40.87-71.98 Strength Test	Danby	TBD	6/14/2017	TBD	8/10/2017		0	15,409	15,409	10,779	0	0	4,630		
1322	Pre-construction	84002081	Hydrostatic Tstng D.11-06-017	JT	JTC	Strength Test	T-1223 L-300A MP 71.98-103.72 Strength Test	Amboy	TBD	6/13/2017	TBD	8/9/2017		0	6,781	6,781	5,532	0	0	1,249		
1323	Pre-construction	84002082	Hydrostatic Tstng D.11-06-017	JT	JTC	Strength Test	T-1224 L-300A MP 103.72-116.48 Strength Test	Ludlow	TBD	6/13/2017	TBD	8/9/2017		0	5,200	5,200	4,587	0	0	613		
1324	Pre-construction	84002083	Hydrostatic Tstng D.11-06-017	JT	JTC	Strength Test	T-1225 L-300A MP 116.48-130.37 Strength Test	Newberry Springs	TBD	6/13/2017	TBD	8/9/2017		0	6,530	6,530	5,954	0	0	576		
1325	Pre-construction	84002084	Hydrostatic Tstng D.11-06-017	JT	JTC	Strength Test	T-1226 L-300B MP 40.49-71.96 Strength Test	Danby	TBD	8/15/2017	NO	10/11/2017		0	6,625	6,625	5,538	0	0	1,088		
1326	Pre-construction	84002085	Hydrostatic Tstng D.11-06-017	JT	JTC	Strength Test	T-1227 L-300B MP 71.96-103.51 Strength Test	Amboy	TBD	8/15/2017	NO	10/11/2017		0	5,341	5,341	4,433	0	0	908		
1327	Pre-construction	84002086	Hydrostatic Tstng D.11-06-017	JT	JTC	Strength Test	T-1228 L-300B MP 103.51-116.28 Strength Test	Ludlow	TBD	8/15/2017	NO	10/11/2017		0	3,869	3,869	3,507	0	0	362		
1328	Pre-construction	84002087	Hydrostatic Tstng D.11-06-017	JT	JTC	Strength Test	T-1229 L-300B MP 116.28-130.39 Strength Test	Newberry Springs	TBD	8/15/2017	NO	10/11/2017		0	3,819	3,819	3,530	0	0	288		
1329	Pre-construction	84002088	Hydrostatic Tstng D.11-06-017	JT	JTC	Strength Test	T-1230 L-300A MP 218.69-237.5 Strength Test	Mojave	TBD	3/18/2017	CNG	5/13/2017		0	5,907	5,907	4,400	0	0	1,507		
1330	Pre-construction	84002089	Hydrostatic Tstng D.11-06-017	JT	JTC	Strength Test	T-1231 L-300A MP 203.01-218.69 Strength Test	Mojave	TBD	5/6/2017	CNG	7/3/2017		0	4,284	4,284	3,086	0	0	1,198		
1331	Pre-construction	84002090	Hydrostatic Tstng D.11-06-017	JT	JTC	Strength Test	T-1232 L-300B MP 219.49-237.5 Strength Test	Edwards	TBD	4/27/2017	CNG	6/23/2017		0	2,868	2,868	2,182	0	0	685		
1332	Pre-construction	84002091	Hydrostatic Tstng D.11-06-017	JT	JTC	Strength Test	T-1233 L-300A MP 278.4-284.69 Strength Test	Bakersfield	TBD	4/21/2017	TBD	6/17/2017		0	17,060	17,060	3,435	0	12,656	969		
1333	Pre-construction	84002092	Hydrostatic Tstng D.11-06-017	JT	JTC	Strength Test	T-1234 L-300A MP 284.69-290.33 Strength Test	Bakersfield	TBD	4/15/2017	TBD	6/12/2017		0	11,507							

**TABLE 11-1<sup>(a)</sup>**  
**TRANSMISSION PIPELINE PROJECT SUMMARIES**  
**(CONTINUED)**

Line No	Construction Phase	Order Number	Program Description	SAP MWC	SAP MAT <sup>(b)</sup>	Project Description	Project Name	City	Construction Contractor	Mobilization Date	CNG/LNG	Tie-in Date/EDRO	Job Estimate Amount	Total Cost 2015 Actuals Full Year	Total Cost 2016 Actual YTD	Grand Total (2015 + 2016)	Labor Cost	Materials Cost	Contracts Cost	Other Cost	Variance to Budget (JE-Total Cost Inception to Date for Completed Projects)	Total Costs Inception to Date for Completed Projects
1359	Construction	97003042	Stan-Pac Capital	44	44A	In-Line Inspection	I-111D SP5 MP 0.11-3.87 ILI Upgrade	Antioch	ARB	8/25/2016		10/22/2016	2,553,081	63,202	1,222,219	1,285,422	178,895	110,012	769,663.84	226,851		
1360	re 2015 complete	97001461	Stan-Pac Expense	34	34A	Strength Test	T-279-13, Line SP4Z, Antioch	Antioch	ARB	1/1/2013		5/1/2013		12,838	(179)	12,659	14,774	0	17,299.36	(19,414)		
1361	re 2015 complete	97001861	Stan-Pac Expense	34	34A	Strength Test	GT SP3 TEST 0.35MI MP 174.04-174.39 PH1			2/27/2014		7/27/2014		2,575	2,502	5,077	13,758	903	15,456.13	(25,041)		
1362	re 2015 complete	97001021	Stan-Pac Expense	34	34A	In-Line Inspection	I-023 SP3 MP 167.31-198.10 ILI Re-inspection							(12,689)	(1)	(12,690)	0	0	(14,175)	1,485		
1363	re 2015 complete	97003121	Stan-Pac Expense	34	34A	In-Line Inspection	I-0500 SP3 MP 198.489-198.55 Retirement ILI Upgrade															

a) Table 11-1 is responsive to: Requirement 11- Projects Completed Year-to-Date; Requirement 12- Projects Started, Pending Completion; and Requirement 13- Projects Planned, But Yet to Start.  
b) Major Activity Types that contain numbers as the first two characters (e.g., MAT 98C) represent capital work. Major Activity Types that contain letters as the first two characters (e.g., MAT JTC) represent expense work.



# Gas Transmission - Inspected Miles

## As of 9/15/2016



Service Layer Credits: Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, Geobase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), Swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community



FIGURE 16-1  
GAS TRANSMISSION - INSPECTED MILES  
AS OF SEPTEMBER 15, 2016

**Legend**  
 ILI Piggable Miles  
 Gas Transmission

1 in = 30.5 miles

**TABLE 19-1**  
**2015-2016 PROJECT-LEVEL ANALYSIS WITH OVER 10 PERCENT COST VARIANCE**

Line #	Order Number	Project Description	Region	Cost Driver	Description	Cost Impacts (\$)	>10% Variance	Comments
L-131	30888833	R-304 Rebuild Foleys Ranch Crossover BALIP	Bay	Unforeseen Pipe/Valve Condition	Pipe, valves or fittings may be leaking or faulty requiring additional work to repair or replace them, including linear indications on the pipe	\$1,049,453	Yes	1) Pipe configuration different than the drawings, requiring significant additional excavation and piping; 2) Leaking valves during the hydrotest; 3) Remove and replace two valves.
				Additional Resources	The availability of labor, equipment or other resources necessary to execute the work.	\$488,202	Yes	Extended OH due to extended schedule.
				Safety/Security	Additional measures to ensure the safety and security of equipment, personnel and the public around the job site.	\$231,388	Yes	The Discovery yard trailers added.
				Weather	Construction delays and resulting additional costs due to inclement weather days (e.g., high rainfall, snow, etc). There is the potential for rain interaction with species (e.g. CTS breeding migration) as well.	\$179,009	Yes	Rain delays; remove mud/water from the storms.
				Design Change After Final Pricing	Any changes to the project design that were excluded from or occurred after approval of the Job Estimate (JE) (e.g. additional sniff holes, expanded excavation, etc.).	\$178,086	Yes	1) Vault design changed; 2) additional bollards were required to protect the equipment; 3) the blowdown support design revised
				CNG/LNG	Unplanned CNG/LNG support provided to other teams because they do not have sufficient resources available or more work than was planned is required to accommodate these teams.	\$55,564	Yes	This bypass was required for the T-16 clearance on L-131.
				Unanticipated Environmental Constraint	Protected/endangered species or plant life may be found at the construction site during construction.	\$45,858	Yes	Additional cost of environmental clearance of the Foley's crossover workspace.
				Traffic Control	Additional traffic control plans/measures required after project mobilization including deferring work hours, number of flaggers, K-rail, railroad flagger availability, etc.	\$25,609	Yes	1) Electronic message boards were requested by Caltrans; 2) K-rails and traffic control were required for the CNG support.
				Unknown Obstructions	Interference from unmarked and unknown obstructions found during the construction excavation.	\$25,454	Yes	An existing concrete vault/pit along with old wood, glass and barbed wire were broken down and disposed of.
				Scope Change after IFB	Addition of project scope including, but not limited to replacement/test length or valve quantities, after approval of the Job Estimate (JE).	\$15,986	Yes	Additional rip rap was installed for the full-length of the slope to prevent erosion control in the future.
L-107	30888836	R-309A/B L-107 MP 31.22 - 33.20 BALIP	Bay	Unsuitable Soil Conditions	Unstable soils may require additional shoring or other measures.	\$6,432,954	Yes	Sheet piles used for shoring due to unstable soils under the topsoil. The additional cost includes purchase of sheet piles, additional labor, increasing trench width to accommodate sheet piling, etc.
				Scope Change after IFB	Addition of project scope including, but not limited to replacement/test length or valve quantities, after approval of the Job Estimate (JE).	\$5,651,702	Yes	Per the request of Alameda County Water District (ACWD), replace an asbestos reinforced concrete (transite) water line owned by ACWD
				Design Change After Final Pricing	Any changes to the project design that were excluded from or occurred after approval of the Job Estimate (JE) (e.g. additional sniff holes, expanded excavation, etc.).	\$388,512	Yes	1) Hand-digging required in some areas; 2) additional welding required according to revised drawing
				Additional Resources	The availability of labor, equipment or other resources necessary to execute the work.	\$232,577	Yes	Extended OH due to extended schedule.
				Traffic Control	Additional traffic control plans/measures required after project mobilization including deferring work hours, number of flaggers, K-rail, railroad flagger availability, etc.	\$215,255	Yes	1) Additional cost due to the Pre-project survey for cross section road needed traffic control; 2) Traffic Control Cost for running trail run at Automall Pkwy.
				Material Delivery/Quality	Later delivery and/or poor quality of materials may cause delay and additional cost.	\$170,020	Yes	Extra time was need to prepare elbows due to the surface condition from the factory.
				Unknown Obstructions	Interference from unmarked and unknown obstructions found during the construction excavation.	\$14,170	Yes	Discovered and removed a concrete vault on the north side of the yard.

**TABLE 19-1**  
**2015-2016 PROJECT-LEVEL ANALYSIS WITH OVER 10 PERCENT COST VARIANCE**

Line #	Order Number	Project Description	Region	Cost Driver	Description	Cost Impacts (\$)	>10% Variance	Comments
L-050A	31101064	R-503 L-50A MP 16.81-18.41 Replacement of 8" Pipe	North	Surface/Groundwater – High Volume	A higher volume of surface and/or groundwater may be encountered during construction	\$3,631,879	Yes	Additional cost due to unanticipated high volume of groundwater during construction. Because the volume of ground water produced exceeded permit conditions for discharge/disposal of ground water, the excess water had to be trucked off site. Additional piping, tank farm, water tanks were added to the project for dewatering.
				Additional Site Restoration	Restoring the site to permit requirements could trigger additional softscape/mitigation requirements. Additional paving/hardscape may be required if construction traffic damages surrounding roads.	\$1,651,660	Yes	Additional paving to restore pavement in multiple jurisdictions impacted the project
				Scope Change after IFB	Addition of project scope including, but not limited to replacement/test length or valve quantities, after approval of the Job Estimate (JE).	\$518,098	Yes	Added additional 107 potholes, and joint Cathodic protection of Kinder Morgan and PG&E gas lines.
				Unforeseen Pipe/Valve Condition	Pipe, valves or fittings may be leaking or faulty requiring additional work to repair or replace them, including linear indications on the pipe.	\$204,845	Yes	1) Repaired a broken pin in Valve V-1. 2) Actual frac tank locations required piping to be run up to 800' from excavation
				Permitting	Unplanned permitting conditions, requirements and delays from various permitting agencies (e.g. limited working hours, limited access, delays in issuance, etc.).	\$149,178	Yes	Utility Procedure TD-4632P-01 Cross Bore Prevention and Mitigation was published October 14,2015 with an effective date of April 1, 2016. Procedure requires that all storm drain and sewer lines in the HDD alignment be inspected by CCTV prior to and after HDD pipe installation. PG&E has requested that the procedure be followed for this project, even though the work will be complete prior to the effective date of the Utility Procedure.
				Design Change After Final Pricing	Any changes to the project design that were excluded from or occurred after approval of the Job Estimate (JE) (e.g. additional sniff holes, expanded excavation, etc.).	\$103,944	Yes	Design change moving valve in Cherry St. and requiring potholing all utilities that cross the HDD path
				Weather	Construction delays and resulting additional costs due to inclement weather days (e.g., high rainfall, snow, etc). There is the potential for rain interaction with species (e.g. CTS breeding migration) as well.	\$88,660	Yes	Project delay due to rain storms.
				Additional Resources	The availability of labor, equipment or other resources necessary to execute the work.	\$80,069	Yes	Extended OH due to extended schedule.
L-050A	31101064	R-503 L-50A MP 16.81-18.41 Replacement of 8" Pipe	North	Unknown Obstructions	Interference from unmarked and unknown obstructions found during the construction excavation.	\$75,117	Yes	A 24" Steel conduit was discovered in the ditch line. Unexpected utility conflict at DFM-1025-01 reg station
				Additional Cleaning	Additional cleaning/drying runs beyond what is planned may be required for cleaning any hazardous substances (including, but not limited to Mercury) inside the pipe associated with in-line inspection, upgrades, valves, fittings.	\$42,915	Yes	Existing pipe scrape samples came back with levels of mercury which will require cleaning prior to retirement.
				Land Acquisition/TCE	Difficulty acquiring land/access/TCEs due to a variety of complications (e.g. resistant land owners).	\$36,823	Yes	The land owner of the south pipe stringing area (Gosal TCE) requested that piping and equipment be moved to allow spraying of the orchard on Feb. 20th.
				Traffic Control	Additional traffic control plans/measures required after project mobilization including deferring work hours, number of flaggers, K-rail, railroad flagger availability, etc.	\$8,462	Yes	Caltrans requested that three cores be taken on the West shoulder of Hwy 99 by the north tie-in to determine if it would hold up to continuous traffic loads.

**TABLE 20-1  
ADOPTED AND RECORDED SPEND  
(THOUSANDS OF DOLLARS)**

		Adopted/Imputed Program Amounts <sup>4</sup>		Recorded <sup>1,7</sup>			2015												2016								
Program <sup>1</sup>	MAT <sup>1</sup>	2015 <sup>5</sup>	2016	2015	2016	ITD	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept
TIMP ILI Capital <sup>3</sup>		59,236	89,966	128,389	109,192	237,581																					
Traditional In-Line Inspection		56,256	77,069	128,389	109,192	237,581																					
Non-Traditional In-Line Inspections	98C	2,980	12,897				1,115	3,357	6,880	6,024	7,238	8,181	11,809	13,148	16,416	20,601	14,678	18,941	6,868	9,613	7,245	13,168	12,359	9,312	8,344	28,392	13,890
TIMP ILI Expense <sup>5</sup>		31,521	31,641	60,788	66,472	127,260																					
Traditional In-Line Inspections (ILI)		14,521	17,737	39,845	34,673	74,518	1,383	1,909	3,223	2,402	2,412	2,885	3,284	6,070	4,040	3,277	3,756	5,205	1,684	2,085	3,321	2,879	4,748	3,261	4,569	6,408	5,719
Non-Traditional ILI	HPB	146	149																								
ILI Casings	HPG	3,545	3,629	6	1	7	458	1,160	(981)	188	(326)	(148)	(366)	133	(37)	60	(128)	(7)	(6)	14	4	31	10	4	(27)	(5)	(24)
Traditional ILI - Direct Examinations and Repairs		13,310	10,126	20,936	31,798	52,734	168	2,158	2,376	1,980	1,189	191	1,498	879	1,362	1,999	1,705	5,430	2,618	2,724	4,041	3,254	1,922	3,573	4,539	4,714	4,412
Non-Traditional ILI - Direct Examinations and Repairs	HPI	-	-																								
Pipe Replacement		177,962	182,055	118,285	91,033	209,318																					
Vintage <sup>4</sup>	75E	143,678	146,983	95,729	76,131	171,859	4,724	6,721	7,223	4,478	3,700	5,914	4,096	7,404	14,292	17,766	8,540	10,869	4,024	9,520	9,564	12,414	11,650	9,348	6,781	5,281	7,550
Class Location <sup>1</sup>	75H	17,056	17,448	14,934	3,962	18,896	130	145	165	84	106	75	105	114	192	1,891	8,136	3,791	977	1,960	260	69	52	529	27	46	44
Shallow Pipe <sup>1</sup>	75M	17,228	17,624	2,684	6,492	9,176	43	39	61	62	87	72	122	143	700	815	370	169	(21)	128	236	509	1,017	1,322	1,866	1,019	416
Capital Repair	75Q			4,939	4,448	9,387	233	307	245	1,149	180	474	655	922	1,365	(869)	742	(463)	473	1,481	909	1,161	336	152	(931)	585	282
ILI Capital Repair	75P	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pipe Replacement IM	75Q	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pipe Replacement in Lieu of Hydrotesting	75R	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Direct Assessment	75S	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Exposed Pipe	75T	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pipe Replacements <50 feet (With Burdens) <sup>2</sup>	JT6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pipe Replacements <50 feet (without burdens) <sup>2</sup>	JT6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hydrotest <sup>5</sup>		100,238	102,767	116,100	159,143	275,243																					
Hydro Test - Balancing Account	HPF	10,234	10,469	61,458	45,348	106,806	106	238	414	663	1,201	2,067	5,588	21,927	3,006	9,996	8,253	8,000	3,266	3,196	10,083	11,869	8,439	8,163	4,224	(14,594)	10,702
Hydro Tests - Base Expense (With Burdens) <sup>2</sup>	JTC	90,005	92,298	-	54,642	113,795	925	938	2,553	5,078	4,742	6,046	5,071	(6,390)	14,286	7,476	10,970	2,947	1,457	10,856	14,189	23,848	17,669	12,322	15,988	15,195	2,270
Hydro Tests - Base Expense (Without Burdens) <sup>2</sup>	JTC			30,599	63,725	94,324	518	525	1,430	2,844	2,656	3,385	2,840	(3,579)	8,000	4,187	6,143	1,650	816	6,080	7,946	13,355	9,895	6,900	8,953	8,509	1,271

<sup>1</sup> Gas Operations is performing an in depth review to better align all projects with the appropriate program. Currently recorded costs associated with ILI Capital Repair, Pipe Replacement IM, Pipe Replacement in Lieu of Hydrotesting, Direct Assessment and Exposed Pipe are included in the recorded amounts associated with Vintage, Class Location, Shallow Pipe and Capital Repair. PG&E anticipates to be completed by the end of 2016, notwithstanding any unforeseen circumstances.

<sup>2</sup> Please refer to Requirement 29 narrative of the report for a detailed explanation of overhead allocation methodology change including the differences between expense, capital and balancing account spend. For illustrative and comparative purposes, expenses are burdened based on an estimated burdened factor of 1.8.

<sup>3</sup> The adopted/imputed amounts for TIMP ILI Capital, Vintage Pipe Replacement, Class Location Program, and Shallow Pipe Replacement Program include funding for StanPac (MWC 44). In 2015 and 2016, TIMP ILI Capital incurred costs related to StanPac, are also included in the recorded amounts.

<sup>4</sup> The source of adopted funding for 2015 are D. 16-06-056, Appendix D-Tables 1 and 2, and Appendix I-Tables 1 and 2 which are adjusted for benefits and payroll taxes to reflect the 2014 GRC Decision 14-08-032. 2016 funding is imputed consistent with the adopted Post Test-Year increase specified in Appendix E and Appendix I.

<sup>5</sup> The adopted/imputed amounts for TIMP ILI Expense, and Hydrotest include funding for StanPac (MWC 34). In 2015 and 2016, Hydrotest Base expense and Traditional ILI expense incurred costs related to StanPac, are also included in recorded amounts.

<sup>6</sup> Subtotal variances due to rounding.

<sup>7</sup> All costs include burdens. 2015 uses old cost model methodology to burden and 2016 uses the new methodology to apply burdens.

**TABLE 21-1  
SHAREHOLDER ABOSORBED COSTS  
(THOUSANDS OF DOLLARS)**

Program <sup>1</sup>	Adopted/Imputed Program Amounts <sup>3</sup>					Recorded <sup>4, 9</sup>			Shareholder Absorbed Costs <sup>8</sup>		2015												2016								
	2015 <sup>5</sup>	2016	2017	2018	Total	2015	2016	Total	2015	2016	January	February	March	April	May	June	July	August	September	October	November	December	January	February	March	April	May	June	July	August	September
<b>TIMP BA IU Capital<sup>1</sup></b>	<b>59,236</b>	<b>89,966</b>	<b>92,542</b>	<b>94,949</b>	<b>336,693</b>	<b>128,389</b>	<b>109,192</b>	<b>237,581</b>	-	-																					
Traditional In-Line Inspection	56,256	77,069	78,983	81,037	293,345	128,389	109,192	237,581			1,115	3,357	6,880	6,024	7,238	8,181	11,809	13,148	16,416	20,601	14,678	18,941	6,868	9,613	7,245	13,168	12,359	9,312	8,344	28,392	13,890
Non-Traditional In-Line Inspections	2,980	12,897	13,559	13,912	43,348																										
<b>TIMP BA IU Expense<sup>8</sup></b>	<b>31,521</b>	<b>31,641</b>	<b>56,729</b>	<b>58,011</b>	<b>177,903</b>	<b>60,788</b>	<b>66,472</b>	<b>127,260</b>	-	-																					
Traditional In-Line Inspections (IU)	14,521	17,737	34,535	35,315	102,108	39,845	34,673	74,518			1,383	1,909	3,223	2,402	2,412	2,885	3,284	6,070	4,040	3,277	3,756	5,205	1,684	2,085	3,321	2,879	4,748	3,261	4,569	6,408	5,719
Non-Traditional IU	146	149	152	156	603																										
IU Casings	3,545	3,629	3,714	3,798	14,686	6	1	7			458	1,160	(981)	188	(326)	(148)	(366)	133	(37)	60	(128)	(7)	(6)	14	4	31	10	4	(27)	(5)	(24)
Traditional IU - Direct Examinations and Repairs	13,310	10,126	18,328	18,742	60,506																										
Non-Traditional IU - Direct Examinations and Repairs	-	-	-	-	-	20,936	31,798	52,734			168	2,158	2,376	1,980	1,189	191	1,498	879	1,362	1,999	1,705	5,430	2,618	2,724	4,041	3,254	1,922	3,573	4,539	4,714	4,412
All Other TIMP BA Expense (excluding IU)	42,742	47,164	53,289	54,242	197,437	104,417	81,132	185,549	-	-																					
<b>Total TIMP BA Expense</b>	<b>74,264</b>	<b>78,805</b>	<b>110,018</b>	<b>112,253</b>	<b>375,340</b>	<b>165,205</b>	<b>147,603</b>	<b>312,808</b>	-	-																					
<b>Pipe Replacement<sup>5</sup></b>	<b>177,962</b>	<b>182,055</b>	<b>186,788</b>	<b>191,644</b>	<b>738,449</b>	<b>118,285</b>	<b>91,033</b>	<b>209,318</b>	-	<b>1,576</b>																					
Vintage <sup>7</sup>	143,678	146,983	150,804	154,725	596,190	95,727	76,131	171,859			4,724	6,721	7,223	4,478	3,700	5,914	4,096	7,404	14,292	17,766	8,540	10,869	4,024	9,520	9,564	12,414	11,650	9,348	6,781	5,281	7,550
Class Location <sup>7</sup>	17,056	17,448	17,902	18,367	70,773	14,934	3,962	18,896			130	145	165	84	106	75	105	114	192	1,891	8,136	3,791	977	1,960	260	69	52	529	27	46	44
Shallow Pipe <sup>5, 7</sup>	17,228	17,624	18,082	18,552	71,486	2,684	6,492	9,176	-	1,576	43	39	61	62	87	72	122	143	700	815	370	169	(21)	128	236	509	1,017	1,322	1,866	1,019	416
Capital Repair						4,940	4,448	9,387			233	307	245	1,149	180	474	655	922	1,365	(869)	742	(463)	473	1,481	909	1,161	336	152	(931)	585	282
IU Capital Repair																															
Pipe Replacement IM																															
Pipe Replacement in Lieu of Hydrotesting																															
Direct Assessment																															
Exposed Pipe <sup>7</sup>						-	-	-			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pipe Replacements <50 feet (With Burdens) <sup>2</sup>																															
Pipe Replacements <50 feet (without burdens) <sup>2</sup>																															
<b>Hydrotest Memo Account<sup>8</sup></b>	<b>100,238</b>	<b>102,767</b>	<b>107,930</b>	<b>110,637</b>	<b>418,205</b>	-	-	-	-	-																					
Hydro Test - Balancing Account	10,234	10,469	10,709	10,945	42,357	61,458	45,348	106,806			106	238	414	663	1,201	2,067	5,588	21,927	3,006	9,996	8,253	8,000	3,266	3,196	10,083	11,869	8,439	8,163	4,224	(14,594)	10,702
Hydro Tests - Base Expense (With Burdens) <sup>7</sup>	90,005	92,298	97,221	99,692	375,848	54,642	113,795	168,437			925	938	2,553	5,078	4,742	6,046	5,071	(6,390)	14,286	7,476	10,970	2,947	1,457	10,856	14,189	23,848	17,669	12,322	15,988	15,195	2,270
Hydro Tests - Base Expense (Without Burdens) <sup>7</sup>						30,599	63,725	94,324			518	525	1,430	2,844	2,656	3,386	2,840	(3,579)	8,000	4,187	6,143	1,650	816	6,080	7,946	13,355	9,895	6,900	8,953	8,509	1,271

Gas Operations is performing an in depth review to better align all projects with the appropriate program. Currently recorded costs associated with IU Capital Repair, Pipe Replacement IM, Pipe Replacement in Lieu of Hydrotesting, Direct Assessment and Exposed Pipe are included in recorded amounts associated with Vintage, Class Location, Shallow Pipe and Capital Repair. PG&E anticipates to be completed by the end of 2016, notwithstanding any unforeseen circumstances.

Please refer to Requirement 29 of report and narrative of the question for a detailed explanation of overhead allocation methodology change including the differences between expense, capital and balancing account recorded amounts. For illustrative and comparative purposes, expenses are burdened based on an estimated burdened factor of 1.8.

Shallow/Exposed Pipe disallowance currently estimated at 17.18%. Refer to Footnote 1.

Shareholder funded amounts are pending a 2015 GT&S Phase II Decision.

The source of adopted funding for 2015 are D. 16-06-056, Appendix D-Tables 1 and 2, and Appendix I-Tables 1 and 2 which are adjusted for benefits and payroll taxes to reflect 2014 GRC Decision 14-08-032. 2016 funding is imputed consistent with the adopted Post Test-Year increase specified in Appendix E and Appendix I.

Subtotal variances due to rounding.

The adopted/imputed amounts for TIMP IU Capital, Vintage Pipe Replacement, Class Location Program, and Shallow Pipe Replacement Program include funding for StanPac (MWC 44). In 2015 and 2016, TIMP IU Capital incurred costs related to StanPac, are included in recorded amounts.

The adopted/imputed amounts for TIMP IU Expense, and Hydrotest include funding for StanPac (MWC 34). In 2015 and 2016, Hydrotest Base expense and Traditional IU expense incurred costs related to StanPac, are also included in the recorded amounts.

All costs include burdens. 2015 uses old cost model methodology to burden and 2016 uses the new methodology to apply burdens.

**TABLE 22-2  
PIPELINE REPLACEMENT COMPLETED PROJECT DETAIL**

Line No.	Order	Project Description	MAT	Miles / Valves	Line	MP1	MP2	City	HCA	Class Code	Tie-in date
1	30885310	R-292 L-132 MP 41.83 -42.95 REPL South San Francisco	75E	0.24	L-132	41.83	42.95	South San Francisco	YES	3	04/28/15
2	30931793	R-332 L-132 MP 43.63 Install MLV Hillside & Holly	75E	0.03	L-132	43.63	43.65	South San Francisco	YES	3	04/28/15
3	31004778	R-399 L-191-1 Lowering Main	75E	0.11	L-191-1	0	0	Martinez	NO	0	07/27/15
4	30604310	R-009 L-108 3.05MI MP 40.27-43.46 REPL	75E	3.06	L-108	40.27	43.46	Stockton	YES	3	09/03/15
5	31143751	R-576 L-191-1 Lowering Main Site 1 & 8	75M	0.01	L-191-1	0	0	Martinez	NO	0	09/03/15
6	31148998	R-599A L-118B MP 0.26 Emergency Pipe Repair	75E	0.09	L-118B	0.26	0.28	Fresno	YES	3	09/03/15
7	31020334	R-500 L-134A MP 32.6 install 600ft of 4" pipe by HDD	75M	0.06	L-134A	32.6	32.71	Firebaugh	NO	3	10/27/15
8	31162749	R-634 DFM-1305-01 MP 8.58 Replace 500ft	75E	0.03	DFM-1305	8.58	8.6	Sonoma	NO	3	11/02/15
9	30712773	R-008 L-108 1.92MI MP 38.17-40.27 replace	75E	1.08	L-108	38.17	40.27	Lodi	YES	2	11/20/15
10	30948132	R-496 L-401 MP 323.26-325.42 replace 36" pipe	75H	2.11	L-401	323.26	325.42	Tracy	YES	1	02/04/16
11	31099355	R-495 L-300B 0.66MI MP 280.39-281.6 Replace 3,465ft of 34" Pipe	75H	0.68	L-300B	280.39	281.6	Bakersfield	NO	1	02/13/16
12	31101067	R-502 L-050A_1 0.87MI MP 11.03-11.9 Replace 8" Pipe	75E	0.94	L-050A	11.03	11.9	Live Oak	YES	3	04/16/16
13	30888836	R-309A L-107 MP 31.22-33.20 REPL 9200ft BALIP	75E	1.02	L-107	31.22	33.37	Fremont	YES	3	05/06/16
14	31101064	R-503 L-050A_2 1.73MI MP 16.80-18.41 Replace 8" Pipe	75E	1.82	L-050A	16.81	18.41	Gridley	YES	3	06/24/16
15	31175104	R-650 L-191-1 .0136MI MP 32.05 Replace Lowering Main Site 8	75E	0.01	L-191-1	32.05	32.07	Martinez	NO	1	07/25/16
16	31044010	R-498 L-103 1.23MI MP 17.99-19.26 Replace 12" Pipe	75M	1.18	L-103	17.99	19.26	Salinas	NO	1	08/25/16
17	31216290	R-350B L-131 1.05MI MP 34.85-35.90 Phase 2 Replace	75E	0.26	L-131	35.29	35.94	Livermore	YES	3	09/14/16
18	30974250	R-673 DFM-1306-01 0.16MI MP 3.56 Erosion Mitigation	75E	0.18	DFM 1306	0.16	3.56	Sonoma	NO	0	09/17/16
19	74005280	R-824 L-153 0.52MI MP 25.96-26.48 Replace	75E	0.18	L-153	25.96	26.48	Oakland	YES	3	10/28/16

**TABLE 23-2  
STRENGTH TEST COMPLETED PROJECT DETAIL**

Line	Order	Project Description	MAT	Miles / Valves	Line	MP1	MP2	City	HCA	Class Code	Tie-in date
1	42414537	T-1079 DFM-7222-01 Test, Ceres	HPF	0.95	DFM-7222-01	0	0.87	Ceres	YES	3	04/24/15
2	40755080	T-419-14 DFM-2403-01 Test, Fremont	JTC	0.48	DFM-2403-01	4.96	5.44	Fremont	NO	3	05/04/15
3	42128708	T-1031 L-118A Test, Madera	JTC	8.3	L118-A	28.59	37.38	Madera	YES	3	05/30/15
4	42355064	T-1107 L-302E Test, Marysville	JTC	0.02	L-302E	21.48	21.48	Marysville	NO	1	06/05/15
5	42329394	T-1022 L-300A Test, Coalinga	HPF	5.91	L-300A	366.565	372.4912	Coalinga	YES	1	06/24/15
6	42168740	T-1062 L-300A Test, Hinkley	HPF	3.58	L-300A	159.338	162.92	Hinkley	YES	1	06/26/15
7	42413299	T-1032 L-118A Test, Chowchilla	HPF	6.05	L-118A	37.725	43.64	Chowchilla	YES	3	06/26/15
8	42045594	T-243B-13 DFM-1815-02 Test, Monterey	JTC	4.35	DFM-1815-02	11.52	15.866	Monterey	YES	3	07/02/15
9	42410944	T-1039 DFM-1816-50 Test, Santa Cruz	HPF	1.16	DFM-1816-50	0.00161	1.02	Santa Cruz	YES	3	07/24/15
10	42165789	T-1059A DFM-1615-07 Test, Ripon	HPF	0.22	DFM-1615-07	0.2	0.25	Ripon	YES	3	07/29/15
11	41471917	T-283A-13 DFM-8807-01 Test, Sunnyvale	JTC	5.01	DFM-8807-01	0.04	2.98	Sunnyvale	NO	3	08/01/15
12	42413388	T-1091 L-057A-MD1 Test, McDonald Island	HPF	0.6	L-057A-MD1	0.02	0.616	McDonald Island	YES	3	08/28/15
13	42410946	T-094B-12 DFM-1816-01 Test, Santa Cruz	HPF	2.06	DFM-1816-01	9.55	10.73	Santa Cruz	YES	3	09/01/15
14	42410949	T-095-12 DFM-1816-01 Test, Santa Cruz	HPF	3.52	DFM-1816-01	12.78	16.3	Santa Cruz	YES	3	09/01/15
15	42372872	T-1109 L-118B Test, Fresno	JTC	0.95	L-118B	0.02	0.97	Fresno	YES	3	09/03/15
16	42413384	T-1037 L-118A Test, Livingston	HPF	0.93	L-118A	72.327	73.24	Livingston	YES	3	09/04/15
17	42316168	T-1080 L-300A Test, Kettleman City	HPF	1.12	L-300A	354.095	355.23	Kettleman City	NO	1	09/26/15
18	42413380	T-1033 L-118A Test, Merced	HPF	5.44	L-118A	54.75	60.2	Merced	YES	3	10/05/15
19	42413015	T-402-14 L-109 Test, San Jose	HPF	0.39	L-109	2.71	3.094	San Jose	YES	3	10/13/15
20	42165792	T-1064A L-300B Test, Kettleman City	HPF	0.06	L-300B	354.017	354.031	Kettleman City	NO	1	10/17/15
21	42128787	T-1038 L-118A Test, Delhi	JTC	5.43	L-118A	77.23	83.43	Delhi	NO	3	10/28/15
22	42169903	T-1068A DCUST1423 Test, Mountain View	HPF	0.41	DCUST1423	0	0.367	Mountain View	YES	3	10/29/15
23	42197128	T-1078 L-021D Test, Petaluma	JTC	5.16	L-021D	19.48	24.59	Petaluma	YES	3	10/29/15
24	42169478	T-1063 L-300A Test, North Edwards	HPF	4.18	L-300A	198.825	203	North Edwards	YES	2	11/09/15
25	42316175	T-1083 L-300A Test, San Benito	HPF	1.05	L-300A	413.7722	414.816	Panoche	YES	1	11/12/15
26	42413287	T-1013 L-118A-1 Test, Delhi	HPF	1.42	L-118A-1	0	1.42	Delhi	YES	3	11/17/15
27	42413386	T-005A-12 DFM-0401-01 Test, San Rafael	HPF	0.99	DFM-0401-01	4.49	4.92	San Rafael	YES	3	12/02/15
28	42169479	T-1065A L-300B Test, Morgan Hill	HPF	1.01	L-300B	477.21	477.92	Morgan Hill	YES	3	12/02/15
29	42414526	T-1028 L-118A Test, Madera	HPF	7.87	L-118A	12.55	20.39	Madera	YES	3	12/09/15
30	42122926	T-1008 DFM-0402-01 MP 4.61-5.604 Test	JTC	0.96	DFM-0402-01	4.61	5.604	San Rafael	NO	3	01/27/16
31	42449956	T-1110 L-300B MP 280.9-281.22 Test	JTC	0.33	L-300B	280.9	281.22	Bakersfield	NO	1	02/12/16
32	42485806	T-1036A L-118A MP 64.517-66.208 Test	HPF	1.76	L-118A	64.517	66.208	Atwater	YES	3	03/22/16
33	42572308	TS-020-14 DREG4450 MP 0-0.0915 Test	JTC	0.09	DREG4450	0	0.0915	Atwater	YES	3	03/22/16
34	42165791	T-1061A-C L-300A MP 0.647-1.186 Test	HPF	1.48	L-300A	0.647	1.186	Needles	YES	1	03/25/16
35	42486407	T-1117 L-300B MP 161.01-161.04 Test	HPF	0.04	L-300B	161.01	161.04	Hinkley	YES	1	04/04/16
36	42485807	T-1011 DFM-0834-01 MP 3.571-3.960 Test	HPF	0.28	DFM-0834-01	3.571	3.96	Gilroy	YES	3	04/05/16
37	42485826	T-1017A DFM-7224-01 MP 6.00-6.09 Test	JTC	2.6	DFM-7224-01	6	6.09	Modesto	YES	3	04/07/16
38	42122923	T-1006A-B L-021G MP 13.73-14.97 Test	JTC	2.71	L-021G	13.73	14.97	Novato	YES	3	04/13/16
39	42554046	T-1119 L-153 MP 3.51-3.576 Test	HPF	0.03	L-153	3.51	3.576	Newark	YES	3	04/14/16
40	42414136	T-1019 L-181A MP 16.82988-19.65 Test	HPF	2.62	L-181A	16.82988	19.65	Pajaro	YES	3	04/22/16
41	42483704	T-1036B L-118A MP 66.21-67.639 Test	HPF	1.92	L-118A	66.21	67.639	Atwater	YES	3	04/27/16



**TABLE 23-2  
STRENGTH TEST COMPLETED PROJECT DETAIL  
(CONTINUED)**

Line	Order	Project Description	MAT	Miles / Valves	Line	MP1	MP2	City	HCA	Class Code	Tie-in date
42	42449948	T-1111 DFM-7204-01 MP 0.00-1.993 Test	HPF	1.99	DFM-7204-01	0	1.993	Atwater	YES	3	04/27/16
43	42310511	T-1081 DFM-0402-01 MP 2.233-2.3511 Test	HPF	0.13	DFM-0402-01	2.233	2.3511	San Rafael	YES	3	04/28/16
44	42169902	T-1067A DFM-8805-03 MP 0.0123-0.0140 Test	HPF	0.07	X6430	0.0123	0.014	Mountain View	YES	3	05/02/16
45	42165101	T-1009 DFM-0604-03 MP 0.287-1.98 Test	JTC	1.54	DFM-0604-03	0.287	1.98	Vacaville	YES	3	05/03/16
46	42329463	T-1012 L-105N MP 23.68-25.08 Test	HPF	1.7	L-105N	23.68	25.08	San Lorenzo	YES	3	05/20/16
47	42414134	T-1002A-B L-121 MP 0-3.52 Test	HPF	7.03	L-121	3.52	6.98	Yuba City	YES	3	05/21/16
48	84000660	T-1003B-D L-402 MP 9.52-20.67 Test	HPF	16.22	L-402	9.52	20.67	Redding	YES	3	06/21/16
49	84000661	T-1108 L-402 MP 27.41-38.15 Test	HPF	7.88	L-402	27.41	38.15	Redding	YES	3	07/29/16
50	42191618	T-1069 DREG4738 MP 0.035-0.705 Test	JTC	0.73	DREG4738	0.035	0.705	Palo Alto	YES	3	08/24/16
51	42413558	T-1026A DFM-0613-01 MP 2.43-2.69 Test	HPF	0.26	DFM-0613-01	2.43	2.69	Sacramento	YES	3	09/01/16
52	84001020	T-1141A-B L-109 MP 45.16-45.77 Test	HPF	0.61	L-109	45.16	45.77	San Francisco	YES	3	09/01/16
53	42414529	T-1030 L-118A MP 20.71-28.89 Test	HPF	8.35	L-118A	20.71	28.89	Madera	YES	3	09/21/16
54	42413398	T-1025 DFM-0609-02 MP 0.002-0.624 Test	HPF	0.6	DFM-0609-02	0.002	0.624	Sacramento	YES	3	09/29/16